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THE

AMERICAN JOURNAL

OF

DENTAL SCIENCE,

DEVOTED TO

ORIGINAL ARTICLES;

LIBRARY
UNIVERSITY

REVIEWS OF DENTAL PUBLICATIONS;

THE LATEST IMPROVEMENTS IN

SURGICAL AND MECHANICAL DENTISTRY,

AND BIOGRAPHICAL SKETCHES OF DISTINGUISHED

DENTISTS.

WITH PLATES.

NEW-YORK.
1839.

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ADVERTISEMENT.

The publishers of this Journal have but one great object in view, and that is the dissemination of useful and practical knowledge among Dentists, all of whom are respectfully invited to assist in sustaining the undertaking by becoming subscribers, and also by contributing to the pages of the work. Those who thus desire to co-operate with the publishers, are requested to address their communications to the Secretary of the publishing committee, SOLYMAN BROWN, No. 17 Park Place, New-York, inclosing the amount of subscription, viz:—Three Dollars per annum for a single copy, or Two Dollars and Fifty Cents each for any number of copies.

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KELLEY AND FRAETAS,
PRINTERS.

THE AMERICAN JOURNAL

OF

DENTAL SCIENCE.

ADDRESS

OF THE PUBLISHING COMMITTEE, TO THEIR PROFESSIONAL BRETHREN THROUGHOUT THE UNITED STATES OF AMERICA.

GENTLEMEN :—

The period has at length arrived, when the profession to which we belong assumes a commanding position in the public eye, and challenges successful rivalship with the other useful and profitable avocations of men. This fact is not less auspicious to society at large, than to the professors of Dental Science, and the practitioners of the Dental Art.

Even the Members of the Medical Profession, so proverbial for their reluctance to encourage innovations in the healing art, are beginning to discover the importance of our co-operation in mitigating the woes, and protracting the duration of human existence. The achievement of this object is to be ascribed to the noble spirit of virtuous enterprise with which the present age is inspired, and which we see displayed in every department of human industry and skill. If this spirit is sometimes developed in excess, as when the splendid steam-vessel, ploughing in majesty the billows of the ocean, is followed by the stupid steam-doctor, digging the graves of his victims on the land, it is nevertheless, the consecrated agency by which the destinies of the world are to be gloriously accomplished, and which already has so far transformed the aspect of society, that, could the man who has slept for the last half century, be awakened from his slumbers, he would hardly recognize the world in which we live, as the place of his original abode.

These magnificent results, to appreciate which the man of the present day must traverse oceans by the energies of fire, and fly over plains and mountains on the wings of the wind, are the products of human industry, goaded by a restless enterprize, and guided by resistless genius.

Whether this industry, enterprize and genius, are peculiar to the present age, or whether the existing condition of the Sciences and Arts is the ultimate result of a series of predisposing causes, which have been operating for ages past, is matter of little moment. It is quite sufficient for our happiness and mutual congratulation, to know that we live in an age of unparallelled improvement in all that can result from the energies of intellect acting upon material nature, or from the re-action of matter upon the human mind.

In this condition of civilized man, and of all those Arts and Sciences which embellish life, imparting to it augmented zest and increased duration, it is our happiness to know that neither the theory, nor the practice of the Dental Art, has been left behind the age, either by the incompetency or inactivity of those individuals to whom, in the progress of events, its destiny has been intrusted. If there be any class of men in these States who have "compassed sea and land," in pursuit of usefulness, fame and fortune, braving obloquy, and resisting opposition, enduring fatigue, and despising danger, there are surely many among our professional collaborators who stand in the foremost rank of these benevolent adventurers. Nor have they exerted themselves in vain. Ample fortune and enviable celebrity, have already rewarded the spirited zeal of many labourers in this wide field of professional enterprise; while the improved condition of our Art, as regards its salutary influence on society at large, is a proof of the justice of the desert which has been thus munificently rewarded.

What encouragement, then, is this, to increased exertion in this field of useful labour, and honorable distinction! Who would not prefer to attend these distinguished pioneers in the paths of Dental Science, and share their rewards, rather than follow the Cæsars and Napoleons of past ages to their fields of blood, and their untimely graves?

Presuming that many of those individuals, to whose professional interests this work will be devoted, must feel as we do on the subject of elevating the Dental Science to its deserved position among the callings of men,—and feeling confident that where much has been already done, still more remains yet to be effected, the Publishing Committee have issued this specimen number of a Monthly Periodical, dedicated to the profession at large, with a perfect conviction of the obvious truth, that by their prompt encouragement or silent neglect, it must either stand or fall. That any other class of our fellow citizens, excepting, perhaps, an inconsiderable portion of the medical profession, will afford the least encouragement to the present undertaking, is beyond our hope. The details of Dental Practice, and even the more sufferable theory of our Art, possess an absorbing interest chiefly with the more intelligent and ambitious of our own profession; and it is to them therefore, that we now appeal, by first presenting an expose of our general plan, and then suggesting a few brief considerations to induce our professional brethren to co-operate in our design.

PROSPECTUS.

The plan of "The American Journal of Dental Science," may be expressed in general terms, by saying,—That it is intended as a vehicle of useful information to the numerous Operative Dentists in the United States. That medical gentlemen will be its patrons to some extent, there is little doubt; and that some general readers will become subscribers to the work, and peruse it with interest and profit, we think is equally certain.

The detail of our plan may be seen in the following particulars:

1. The Journal will consist of forty-eight octavo pages per number; twenty-four of which will be employed in re-publishing Standard Works on Dental Theory and Practice; as in the present number.
2. This Specimen Number is a sample of the entire Work as regards the size and quality of the paper; the character of the typography, and the general appearance of the Journal.
3. The re-published Works will be so printed that the numbers may be separated, and the two halves distinctly bound; making two entire works of which the re-publication will amount to at least a volume in each year, worth of itself the whole subscription price of the magazine.
4. Each number will contain the Biography of some Dental Writer or Practitioner, with Portraits in all cases in which they can be obtained.
5. Each number will contain a Review of some Dental Work, or translation from foreign languages.
6. Each number will contain Communications from contributors, on the various topics of useful discussion, relating to the physiology, pathology, preservation, restoration, and general management of the teeth, and adjacent parts.
7. Curious Facts, and Dental Anecdotes, will give interest to the pages of the Journal.
8. The Arts of Quackery will be boldly exposed; and the public will be instructed how to avoid the impositions of ignorant pretenders.
9. Numerous wood cuts, and other prints, will embellish and illustrate the work, as the state of the subscription will justify.
10. The Journal will be published simultaneously in Philadelphia, Baltimore, New-York and Boston, on the first day of every month, to commence as soon as the number of subscribers will permit.
11. Each and every Article admitted to the pages of this Journal, will be accompanied by the name of its author.
12. All Letters and Packages must be post-paid.

13. Any individual who will remit to the Editors, Publishing Committee, or Treasurer, the sum of Five Dollars, shall receive two copies of the Journal through twelve numbers.

14. The work will be Edited by Chapin A. Harris of Baltimore, and Eleazar Parmly of New-York.

15. The Publishing Committee are E. Parmly, E. Baker, and S. Brown, of New-York.

16. Mr. Jahial Parmly of New-York, is the Treasurer of the Association, and will receive subscriptions by mail or otherwise.

17. Subscribers who desire that their numbers should be forwarded otherwise than by mail, will please to give written instructions on the subject.

18. The Journal will be mailed in the four cities of Philadelphia, Baltimore, New-York, and Boston, for subscribers living near those cities respectively.

19. A list of subscribers will be published in at least two numbers of the Journal in each year, and to this end subscribers are requested to give their names in full, with places of residence if stationary; or with the places they annually visit, if migratory. Those residing in cities are requested to give street and number.

20. Dentists who approve the objects of this Journal, and wish to give it more decided encouragement than by becoming subscribers for single copies, are requested to take several copies for private distribution; and also to obtain subscribers to the Journal.

As motives to induce the members of the profession to subscribe liberally for the work themselves, and to obtain subscriptions among their medical friends and others of their acquaintances, the Publishing Committee take the liberty of suggesting the following propositions:

1. There is no fraternity in the United States, of equal magnitude and importance, which has not some publication devoted to its interest.

2. The necessity of a general diffusion of knowledge in Dental Theory and Practice, if not felt by the profession, is at least deplored by the public.

3. There are many high-minded men of great knowledge and experience in our Art, who will gladly communicate the results of their obsertion, for the benefit of the younger members of the profession.

4. Such a work will have a tendency to expel from Dental Practice, the quackery which disgraces it, just in proportion as it dissipates ignorance on the subject from community at large.

5. It will give to distant parts of the country the benefit of all the Theoretical and Practical knowledge, which exists in our large cities, on the subject of operations on the teeth.

6. This publication will diffuse important kinds of information which is now local and limited, for want of a medium of publication.

7. It will associate in fraternal feeling, many who will be benefitted by the association.

8. This Journal will perpetuate those numerous Treatises on Dental Science and Practice, which are now nearly out of print; as well European as American.

9. If the members of the Profession, few in number compared with the patrons of other periodicals, do not subscribe liberally to the work, there is little probability that it can be long sustained.

10. The publication of such a Journal, will have the effect of giving dignity and importance to the general subject of Practical Dentistry; and thus result in solid advantage to each and all of its professors, as well as to community at large.

11. The state of the subscription list will indicate the scene of operation of the principal Dentists in the United States, and thus inform that portion of the profession who are not stationary in their labours, to what points their exertions may be most profitably directed.

12. The publication of the entire list of Practitioners in the United States, will have a tendency to check the exuberant influx of half educated aspirants, who imagine that the field of labour is but partially occupied, and thus expose themselves to ultimate disappointment.

In relation to the last of these propositions, it should be remarked, that although the number of dental practitioners in the United States, whose services are of any value to the public, is sufficiently limited, yet the persons who could convince the community of their real interests on the subject of their teeth, and induce them to employ the profession, must be differently educated from those whose abominable mal-practice has so long disgraced the profession, and imposed upon mankind.

It is to remedy this state of things as well in the practices of the profession as in the opinion of community, that the present work is proposed to be established—and we feel confident, that no Dental Operator who does not find it for his interest to perpetuate the present state of things, will refuse it his cordial support.

It was under the influence of this belief, that the Publishing Committee have issued this specimen number of the work, which they intend to forward by mail or otherwise, to every Dentist whose name and residence they can obtain in the United States and British provinces of North America. To enable them to effect this purpose, they solicit each and every individual in the profession, to forward to them, not only his own name and residence, but the name and residence of every professional brother with whom he may be acquainted in any state of the union. The letters should be post paid, for the obvious reason, that the price of postage will not be felt by the individual writer, but would be a burdensome item in the accounts of the publishers.

With these remarks, we submit to our professional brethren the important question, whether a dental magazine can be sustained in our country.

ELEAZAR PARMLY,
ELISHA BAKER,
SOLYMAN BROWN,
PUBLISHING COMMITTEE.

New-York, June 1st, 1839.

REVIEW,

BY SOLYMAN BROWN.

" The Dental Art, a practical treatise on Dental Surgery, by Chapin A. Harris, M. D., Surgeon Dentist."—Baltimore—Armstrong & Berry, 1839, 338 pp. Octavo.

The members of the profession, and students in particular, have long felt the necessity of a treatise on Dentistry in all its branches, medical, surgical and mechanical, which should at once be comprehensive in its scope, practical in its detail, correct in its science, and beautiful in its typographical execution. This desideratum is now supplied in a manner highly creditable to the accomplished author, and peculiarly acceptable to the profession at large. No dental work of exactly a similar character has ever been issued by the American press, and thence it comes in competition with the work of no living author on this side of the Atlantic. In comparison with English and French publications on the same subject, it can suffer nothing, and indeed possesses one advantage, inasmuch as it brings down the history and knowledge of our art to the present day, with all the improvements which the genius of American practitioners has introduced into their favorite science.

Dr. Harris has proved himself so well qualified for his task, that it may be safely asserted, that no one volume in the English language cantains an equal amount of correct and valuable information for the use of the student in dentistry; and indeed the pupil would be compelled to ransack many volumes in different languages to arrive at all the valuable truths comprised in this work. There are manifested also in Dr. Harris' volume, an originality of thought, and an independence of opinion equally calculated to elicit truth and expose error.

But there is still another point of view in which this treatise should be regarded, by all who are either operators or subjects of dental practice. It is this :—The author has so well acquitted himself, that his work is calculated to give dignity and importance to the subject of which it treats; evincing that the writer is one of those high-minded men who impart respectability to the calling which they pursue, rather than increase their own importance by its exercise.

The time has come when the Medical Faculty, and the most discerning members of society at large, are beginning to rank the profession of the Dentist with those other avocations of men, which are honourable because they are useful, and profitable, because their exercise demands peculiar qualifications to ensure success.

In all professions, there will be found those who presume upon abilities which others never discover, and wonder that fortune does not smile upon their presumption. But the period is not far distant, when it will be learned, as well by the profession as by its patrons, that if there are any arts of civilized society which require for their exercise, education, genius, moral integrity, solid judgment, scientific discrimination, and mechanical skill, the Art of Dentistry stands pre-eminent among the number.

Who would willingly permit a stupid bungler, ignorant alike of his own business and of every thing else, to operate upon the delicate and sensitive organs of the mouth? Whatever qualifications other callings may require, most assuredly, the offices of the Dental Operator should be performed by a gentleman in manners, an artist in skill, a man of tender sensibility and refined decorum.

It is surely no flattering compliment, either to the profession which we follow, or to the community which requires its services, that in many instances, those who have been openly disgraced by notorious criminality, are still the objects of public favour. For the correction of this, and many other evils, publications like that under review, are eminently designed. Dentistry, with its present improvements, is a new science, and it requires writers of education and genius to give it consistency and reputation.

This work contains no irrelevant matter; every page is filled with useful and interesting information; so that the student will find it a text-book exactly suited to his wants, while the general reader, or the educated dentist, without meeting with any thing to offend his taste, will find something to increase his knowledge.

The following extracts will furnish the reader with a specimen of the author's style; but we trust that every member of the profession will avail himself, without delay, of the entire work.

ABUSES OF DENTISTRY.

"Confided, as this branch of surgery always has been, in almost every country, to the hands of whoever seemed disposed to attempt the exercise of its intricate duties, it is not to be wondered, that it should have frequently fallen into obloquy and disrepute. But how much soever it may have suffered from this cause, its utility is not the less great, and we can only regret that public opinion has not been sufficiently awakened to its importance to defend it from the impositions of pretending empirics.

It is a remarkable and humiliating fact, that though dental surgery was never better understood, yet its principles were never more erroneously practiced and shamefully abused than at the present day. It may now be said to have attained its greatest perfection ; but while there are many that have carefully studied its principles, and devoted themselves with zeal and integrity to its practice, there are others, actuated by less praiseworthy motives, that have attempted to discharge its duties without possessing any of the necessary preparatory qualifications, and in consequence, many injuries have resulted from their operations."

The author has the following remarks on the effects of Mercury:

" Mercury does not, as many imagine, exert any direct action on the teeth ; it is only by the effects that it sometimes produces in the gums and the secretions of the mouth, that they are injured by its use. When it is given in sufficient quantities, and long enough to produce ptyalism, however slight, it becomes hurtful to the teeth, and just in proportion as it affects the juices of the mouth, are the corrosive properties of these fluids increased. Hence, it can be considered only as an indirect cause in the production of caries.

The relation which the teeth sustain to the maxillæ, however, is often very seriously affected, and sometimes entirely destroyed, by the exhibition of this medicine. Its introduction into the system is generally followed by an increased action of the absorbents, and in no part of the body is this more evident than in the gums and alveolar processes. It sometimes occasions a very rapid loss of substance in these parts, so that the teeth, by the absorption of their sockets, are loosened, and, in a few months, caused to drop out. A few years ago, an application was made to me, for a set of artificial teeth and gums, by an interesting young lady, of only twenty years of age, who had lost nearly the whole of her teeth, by the absorption of her gums and alveolar processes. She informed me, that about four years before, she had been afflicted with a severe attack of bilious fever, and during its continuance, had taken a great deal of mercury, and, in consequence, had been so badly salivated, that her teeth were loosened, and soon after her recovery, dropped out one after another, in spite of the efforts of several physicians and dentists to preserve them, until only nine remained.

The deposition of tartar upon the teeth, is much increased by the use of this medicine, especially when it affects the saliva. So much, in fact, is the tendency to a deposition of this substance increased by its exhibition, that persons laboring, for the first time, under a mercurial diathesis, frequently have the crowns of their teeth, opposite the mouths of the salivary ducts, completely coated with it in a few days."

Remarks while treating of Mechanical operations.

"Many have chosen dentistry as a profession, with the belief that a knowledge of it was more easily acquired, than that of any other; and some, after having followed it for two or three years, and finding that in order to attain respectability and usefulness in it, greater difficulties were to be surmounted than they had anticipated, have preferred to abandon it altogether, rather than bring disgrace upon both it and themselves. Let no one, therefore, be deceived into a belief, that, in a few weeks or months, he can become master of the art; for, should he commence its study under such an impression, he will most assuredly be disappointed, and, perhaps, find, after having devoted to it what he before thought sufficient time for its entire acquisition, that he has scarcely attained to a knowledge of its elementary principles."

Extract from a Treatise on Second Dentition, by C. F. Delabarre, Translated by C. A. Harris, M. D. Surgeon Dentist.[*]

GENERAL CONSIDERATIONS.

"Whilst the various branches of the healing art, are fast approaching to perfection, and the light of pathological research now lends its aid to practitioners, in the most complicated diseases; Dentistry by no means keeps pace with these improvements. It does not receive that attention from public schools, which its importance demands; and although we have many works, ex-professo, on the structure and diseases of the teeth, yet many more are still to be desired. Authors on Nosology and Physiology usually confine themselves to some particular department of medicine, and discuss in but a very superficial manner, all other subjects, which for the completion of their works they are compelled to notice. Many of them, indeed, though fully confessing the great want of knowledge that exists, of the expansion, growth and affections of the teeth, are nevertheless, unable, by reason of their numerous engagements, to devote them selves to this study.

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[*] On Second Dentition, this is the best if not the only complete work extant; but it has for a long time remained either wholly unknown to practitioners, or they have only resorted to it as a work of refference, without being able to devote sufficient time to master the difficulties of a foreign tongue, in order thus to fully understand

These bones, indeed, were formerly regarded merely as ornaments of the face, and accordingly their preservation was rather the province of the perfumer than of the regular physician.

But modern physiologists, in lecturing on the phenomena of digestion, have now very clearly shown, in what manner the teeth are necessary for the performance of one of those functions on which life depends. It is now well known that the alimentary canal is charged with those substances designed for growth and preservation of the individual, and it must be aided in its operations by mechanical means. Man's stomach cannot act with ease, unless the destined aliment has first passed through a previous preparation. Accordingly, our food is first roasted or boiled and seasoned in various ways before it is committed to the mouth, in order that it may the better be prepared to be submitted to the action of the stomach, by its being penetrated with saliva, the secretion of which is called forth by the presence of the food, and by mastication. But how can this last be performed with jaws unfurnished with teeth?

In those animals which have a membranous stomach, the teeth are designed as auxiliaries to facilitate its operations; and, as it has pleased the Creator to use an endless variety of means to produce the same results, those species, whose stomachs are of a weak texture, are supplied with teeth, while those which possess this organ endowed with great muscular power are unfurnished with them.

The stomach in animals of the ruminating kind, whose dental arch is incomplete, generally supplies the want of these bones, and the food is brought again to the mouth, there to be masticated anew and to be submitted again to *insalivation.*

The physicians of our day, better appreciate the importance of Dentistry than those of a former age; they recommend it to our attention,—they do not neglect to examine the habitual healthy state of the mouth, and hence, they frequently make inductions which are useful to them in cases of disease.*

The phenomena exhibited in the development of these small bones, which now engage our notice, have attracted the attention of some, and

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its contents. A treatise on this part of the science, has long been needed in our own language; and with a view of supplying this want, the translator contemplates presenting in a short time, the whole work to the American public, accompanied with numerous notes and an introduction. HARRIS.

* Notwithstanding the excellence of the most modern treatises on semiology, there are a certain number of important symptoms connected with the jaws, the saliva, the tartar, &c. which have not yet been mentioned.

excited their curiosity; but, to speak freely, this part of the science is still too much neglected and too little understood,—it demands a less superficial study, from those who devote themselves to the honourable task of instructing their pupils in all the branches of the great medical art.

Although there have been a great many very interesting works on First Dentition, still all the phenomena of which it is composed, have not yet been fully enumerated; it is for time and experience to supply these deficiencies.—Happy will he be who shall diminish their number.[*]

First Dentition, however, has been under the inspection of men of approved medical knowledge; it is not thus with the branch we are now considering;—it has been left to the observation and sagacity of Dentists, possessing none of the knowledge which is to be found only in physiology.

The laws that govern the expansion, growth and arrangement of the teeth, are properly the patrimony of the physician, who should understand those, in order to direct the dentist whenever (as is sometimes unfortunately the case,) he is not furnished with sufficient information on all the duties of his profession.

It is very desirable that there should be a class of physicians, who give their attention to the practice for diseases of the mouth; this is the only means of preventing so important a part of our art from falling into the unskilful hands of mere practitioners, or from becoming the prey of the vilest charlatans. Such persons cannot practice surgery without detriment to society.

He that is nothing more than a mechanician, ought not to be admitted into the sanctuary of Esculapius. His duty here, should be confined to the management of those machines, with which alone he has the right to interfere.[†]

I repeat it, the knowledge of true Dentistry is not sufficiently diffused, and never will be, until it shall have been made as much a portion of public instruction, as the various other parts of the art; then, and then only will it be cultivated by educated men, and advance with the same vigour as the other branches of medicine.

The management of Second Dentition, is a stumbling-block to Dentists of moderate abilities; they have for this, a certain routine, which, I say it with regret, is sustained by writings of authority with those who find in these books of ready made opinions, food for their minds, and foundation for their practice, without giving themselves the trouble to estimate their value.

It is in order to eradicate these errors, that I have determined to publish this work. It is not my intention to establish any new system; the natural method which I here explain has been followed by many distinguished Dentists ; but they have either not made public the results of their experience, or have done it in a brief manner. I here show that which enlightened men practice daily with success ; and I only add some few reflections, drawn from my practice, and from an anatomical examination of the jaw, considered from the first moment that the adult teeth appear, until the period they take their place in that circle, which, after their growth they are destined to occupy. Thus submitting my observations to the just criticism of professional men, I leave it to their abilities to decide upon a subject of so much importance as to interest every class of the community.

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[*] The work of Professor Beaumes, on First Dentition, should, nevertheless, be well studied: it is justly placed in the first rank.

[†] I have not room here to express my regret, that goldsmiths, jewellers, watch-makers and workers in ivory, having laboured only as such in the laboratories of dentists, without having studied, without ever assisting at their operations, should obtain permission to practice. Let us however, hope, that under the wise regulations that are proposed for the practice of medicine, these sorts of admissions will no longer occur; and that with these, will also disappear those great teeth of varnished ivory that indicate the abodes of these dentists, and which to the shame of the art, are also seen at the doors of some more respectable personages.

Among the numerous authors, both native and foreign, that I have been obliged to consult before writing,* I have not found any who do not seemingly present some system founded on their own personal observation; they abandon themselves to reasonings more or less specious, and forsake the paths of experience to follow the vagaries of their imaginations. Others do not fully explain themselves on this point; they elude and seem afraid to grapple with the subject.

Sprengel has justly remarked, that the road of experience is very difficult to travel, for it is easier to follow the suggestions of fancy, and by an unvaried routine, to acquire a certain amount of skill, than to confine one's self to the narrow and thorny path of observation.

These principles may be applied to the treatment of Second Dentition; it is much easier to extract the teeth, than to determine whether this is absolutely necessary. The extraction of a tooth requires nothing more on the part of the practitioner, than a certain degree of facility in the use of the instruments that are usually employed in this operation; whilst the knowledge necessary to appreciate the consequence, can only be acquired by time and study.

Fauchard, Jourdain, Bourdet and other writers of a more modern date, have treated this point with a sort of indifference, unfortunate for the profession, and painful to him who expects to find in the works of these learned Dentists, something which at least will instruct him.

In his *Dentiste de la Jeunesse*, so finely written, M. Duval has shown great literary talents ; but this work seems rather to be designed for the public at large than for men of the profession. The author, believing that his professional brethren were as learned as he, has not taught them precisely what he should have known so well how to teach; he has not mentioned how very necessary it is in order to assist Dentition, that the means should be varied according to circumstances.

In another work, excellent in many respects, he has not reckoned among the dangers of extraction, the imperfect configuration of the Dental Arch and the destruction of the germs of adult teeth, the common result of an improper extraction, and which a practitioner of his merit could not have failed to observe."

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* I have employed some moments of leisure to translate the works of Hunter and Fox upon the human teeth. My intention at first, was to publish them : but I have found in them so many opinions, and so many things which do not accord with our actual knowledge of physiology, that I regard them only as good sources from which we may derive information, but whose engravings constitute their greatest merit.

We do not wish to be considered as coinciding with M. Delabarre in all his views, though on the whole, we regard his Treatise on Second Dentition, as decidedly the best that has ever been published. He has, it is true, in many places, while attempting to point out errors in others, fallen into very palpable ones himself, which, should we, as it is our intention soon to do, ever publish the whole work, we propose to notice. He has, as must be acknowledged by every one acquainted with his work, discussed the subject on which it treats, in a very able and masterly manner.

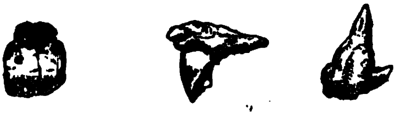
The general principles laid down by Fox, for the treatment of Second Dentition, evince a thorough knowledge of the subject, and have constituted the basis of the established practice ever since, but he did not enter sufficiently into detail. There are many things connected with this subject, which are necessary for the practitioner to understand, unnoticed by him. Upon these M. Delabarre has treated at large.

ACCOUNT OF A REMARKABLE TOOTH, WITH DRAWINGS,

By E. Baker, Dentist, New-York.

The tooth represented in the figure below, was extracted by me nearly twenty years since, from the mouth of a boy about twelve years of age, in Norfolk, Virginia.

The history of the case was as here represented. The child, when about eight years of age, fell, and this tooth coming in contact with a stone was broken about where the crown of the tooth joins the fang, and in such a manner, that the crown forms a right angle with the fang.



The phenomena attending this case, are, that the broken part of the tooth should be retained in the mouth after the accident, and that a secretion of ossific matter should take place, so as to completely join those two parts together. Having stated the fact, I will not obtrude my opinion concerning the *modus operandi* of nature, in joining those two almost separated parts together, but submit it to more able physiologists.

I may, however, observe, that this case will perhaps entirely settle the conflicting opinions concerning the organization and vitality of the teeth. Dr. Hunter was of opinion, that they were extraneous bodies; that they had no circulation in the bony part, yet possessing a living principle.—Since his time, the opinion has been constantly increasing, that they are not only connected by their organization to the system in general, but have nerves, blood-vessels, and absorbents; and are analagous in this respect, to other bones. That there are in the internal cavity of the teeth, nerves and blood vessels, has not been disputed; but whether these essential components of animal organization, *do* or *do not* enter into the composition of the teeth themselves.

In conclusion: does not the case prove, that the teeth are not only *like* the other bones of the human body, but possess as actively the living and self preservative principle? For it must be recollected, that the healing of the tooth here represented, was accomplished nothwithstanding its exposure to the atmosphere, to the effects of the aliment taken into the mouth and to the danger of disturbing the fractured part by the tongue and other teeth, while in the process of healing.

An extraordinary instance of the force of the hereditary principle; in which is seen an example of the tendency of every thing in nature to produce its like.

BY SOLYMAN BROWN, NEW-YORK.

That constitutional peculiarities, whether they be excellencies or defects, are propagated from parent to offspring, even to remote generations is a fact too well established in physical as well as moral science, to admit of doubt. In this respect, the human teeth conform to the general law of nature, as will be evident from the following facts among thousands of a similar character, which are familiar to every experienced Dentist.

In the summer of 1834, the writer of this article, spent a few days in the pleasant village of Frederickton, the capital of the British province of New Brunswick, situated on the River St. John. A lady of that place, presented to me her three little daughters, each of whose left, superior, lateral incisor was black and glossy like polished ebony.

On examining the mouth of the eldest child, who was some twelve years of age, I was so struck with the appearance of a tooth absolutely black, that I put several questions to the mother, the answers to which threw no satisfactory light on the subject. When the second daughter displayed a similar tooth, occupying exactly the corresponding position in the mouth, my surprise was very naturally increased, and absolutely ended in astonishment when the third child showed a precisely similar tooth. Some strange hereditary influence, I was convinced, must have produced this singular phenomenon, and looking anxiously at the mother to ascertain whether she had transmitted the peculiar feature to her offspring, I inquired whether she had such a tooth. As she opened her mouth to answer me, I perceived that her front teeth were white and perfect, and began to doubt the propriety of my surmise, until she put her finger to the place, saying—"In this same spot, I once had a similar tooth, but my parents caused it to be extracted when I was a child."—I found, upon inspection, that her left, upper, small incisor was actually missing, and the adjacent teeth had closed together, leaving the dental arch apparently entire.

Although this example may not, perhaps, be more convincing than a thousand others which are familiar to the members of the profession, it is, at least, unique in its character, and is well fitted to illustrate the well known principle of hereditary predisposition to certain forms of disease.

It is sincerely hoped, that our professional brethren will furnish the Editors of this Journal, from time to time, with statements of anomalous facts which can be well attested, and which illustrate any of the great truths of science.

The remarkable phenomenon described on another page, by Dr. Baker, and which all persons who have seen it, pronounce unparallelled in its singularity, is of this character;—and so incredible is the account of this specimen when committed to paper, but which I can affirm to be wholly true from actual examination, that I am confident, any Dentist or Surgeon will feel himself fully compensated for his trouble, if he will take an opportunity to call on that gentleman, at No. 6 Warren-street, and inspect the tooth personally.

Dentists residing in those sections of the country where it is difficult to obtain drawings of the specimens which they wish to describe in the pages of this Journal, are requested to forward the subject of illustration to either of the Editors by some convenient opportunity, and the necessary drawings will be obtained in this city, Baltimore or Philadelphia, to explain the text.

DENTAL LIBRARY.

The Publishing Committee have the satisfaction to acknowledge the good fortune of having received from Mr. Eleazer Gidney, Dentist, recently from Manchester, England, but formerly of this city, the loan of his Dental Library, consisting of books and prints collected in France and England with much labour and expense. This valuable collection, embracing the principal publications on the subject of the teeth, which have appeared during the last and present century, has been generously placed by Mr. Gidney at the disposal of the publishers of this Journal, subject indeed, to his order at any future day. The catalogue which will be found on the 23d and 24th pages of the present number, it will be seen, does not embrace the works of American writers on the subject; and the publishers respectfully request the authors of Dental Treatises, in the United States, to forward copies to the Publishing Committee in order that a catalogue may be given in our next number. The importance of such a Library as the publishers already possess, augmented by the works of American authors, can hardly be overrated in connexion with the progress of the present undertaking; and the thanks of the Publishing Committee, are hereby respectfully tendered to Mr. Gidney in behalf of the profession generally, for his liberal encouragement of their efforts to establish an American Journal of Dental Science.

REMARKABLE CASE OF OSSEOUS UNION OF THE TEETH.

By Eleazar Parmly.

A lad about eight years of age, was brought to me by his parents, whose mouth presented the most singular appearance that I had ever witnessed. The incisors were all through the gum, and about one half of the crown of each tooth could be distinctly seen; but they were so irregular in their arrangement, and so remarkable in their form, as to render the mouth so unlike that of other children of the same age, that no person seeing merely an impression or cast of the mouth, would imagine it to belong to a human being. The superior front and lateral incisors were completely and perfectly united both in their enamel and bony structure; the posterior surface showing two distinct teeth, while the anterior presented one smooth and polished surface, excepting at the cutting edge, where there was a slight division. These teeth were as large, and occupied as much space as the four front incisors generally do in the male subject. They were very prominent, and behind them were two other teeth in form and size resembling the lateral incisors.

In order to remedy this ill shapen and unnatural formation and growth, I proposed to the parents to remove the two central incisors, together, of course, with the laterals attached to them, and then by mechanical pressure, to bring the two supernumerary teeth together which stood behind them; and also, bring forward the cuspidati in proper time so as to make a tolerably even arrangement.

I frequently see the young gentleman, whose permanent teeth have now all come in with the exception of the wisdom teeth, and stand in the following order: The two supernumerary teeth occupy the place of the superior front incisors; the cuspidati occupy the position of the lateral incisors; the first bicuspides, the place of the cuspidati, and so on, forming a very pretty arrangement, and one that a casual observer would not notice as differing essentially from other mouths.

I have a two fold object in laying a statement of this case before the profession. The first is to convince parents that in all cases how great soever the irregularity may be, teeth can, by proper care and skill, be brought into systematic order. My second object is to settle a long contested point, whether there does exist any well attested instance of osseous union of the teeth.

Mr. Bell, in his excellent work on the Anatomy of the Teeth, asserts the existence of such union, which is confidently denied by Mr. Koecker. Mr. Bell, in his rejoinder, intimates that Mr. Koecker not only has seen, but may again see, at Guy's Hospital, a perfect example of this kind.—That the specimen which I have in my possession is incontestibly of the same character, no person can doubt, who will take the trouble to inspect it.

I have extracted within the present month, two teeth, the crowns of which were thus completely united.

The Publishing Committee are happy in having an opportunity to enrich the first number of their Journal with the following article from the pen of Dr. Flagg, on the subject of the *Dental Ligament*, which has been a topic of some discussion, of late, in the newspapers and magazines of the day. In the hands of a writer, distinguished alike for his professional skill and intellectual attainments, and every way qualified to investigate the question of the existence of such a ligament, the subject has been carefully examined, and, we think, satisfactorily put at rest. At any rate, the pages of this Journal will be always open to a temperate discussion of this, and every other topic connected with the usefulness of our profession.

From the Boston Medical and Surgical Journal, February 27, 1839. Vol. 20, No. 3.

ANATOMICAL DISCOVERY—THE LIGAMENTUM DENTIS.

To the Editor of the Boston Medical and Surgical Journal.

Dear Sir.—I have been somewhat inclined to address you on this matter of the *new ligament*, before this, as it has made much stir in Philadelphia for these three or four months past; yet on reflection I could not but view it as of too ridiculous a character to deserve serious comment in a scientific journal. But I have been in error: and the subject has been publicly introduced in the American Journal of Medical Science, by a very respectable teacher of anatomy—Dr. P. Goddard, of Philadelphia. It is therefore, now a subject not to be passed over in silence, by those who are seeking for truth, and who are willing that the whole truth, and nothing but the truth, should be told.

While on a visit to Philadelphia, in October, I heard much of the skill of a certain dentist—a Mr. Caldwell—who extracted teeth without giving pain, or causing so little that it was not worth considering; that he removed them from the Jaw with much less effort than is usually requisite, commonly with his fingers, using no instrument but a lancet or penknife to *loosen the tooth*, which he did by cutting a previously unknown *ligament* that he had discovered, and which he declared to be the main bond of attachment between the teeth and jaw, and the principal obstruction to their removal from their bony sockets.

I treated the matter as one of the thousand that are devised to gull the public, who are generally ignorant of the truth in regard to such things. I found myself, however, so much opposed by several friends who had heard of the dentist and his discovery, and who stated many cases which had been related to them of facts, that I was determined to see Mr. Caldwell, and be informed from the only source whence I could expect to be fully satisfied.

I saw Mr. C., and after spending about an hour with him, endeavoring to get definite answers to my questions, which were mostly replied to by asking me others, or reading to me portions of manuscript which he had written on the subject, but which appeared to me to have no bearing on the question of the ligament, I was obliged to leave him with much the same impression that I had entertained previous to my call.

Although Mr. C. received me with great civility, and allowed me to ask any question that I wished, he was apparently unwilling to answer them till he had stated the views of several writers with regard to the articulations of the teeth, and the anatomy of the parts connected with them, and requested to know my views concerning certain conflicting opinions. This seemed to me to be done for the purpose of discovering whether he was dealing with one who had any definite or exact knowledge on the subject; for, as we approached it more nearly, and I had obtained all the explanation I was likely to get, and said to him, "then it seems you have not any new organ or part to demonstrate which has not been known to us before, and described by those who have written on the subject, and the parts which we call fibrous membrane and gum, or periosteum and gum, you call ligament"—his reply was something like this: "Why, sir, you know the names of parts depend on the fancy of those who give them." This appeared to me like grasping at a more slender hold, and very much like what is vulgarly called backing out. Our conversation ended here, but as I was leaving the room, Mr. C. said, the part which I call the ligament is situated between the teeth, only, and it is there that I cut to loosen the one which I wish to extract.

Since this my attention has been directed to the article of Dr. Goddard above mentioned. On reading it, I could not but feel surprised at the result of Dr. G.'s researches, if he was at all acquainted previously with the minute anatomy of the parts under consideration, and with the situation of the teeth in the different stages of their formation and development. And since Dr. G. thinks he has discovered *the ligament*, I am sorry he did not think his communication worthy of a plate which would in some degree serve as an illustration, rather than send it out with a diminutive wood engraving, perfectly indefinite in its delineation in the points which should relate to his discovery.

On the ground of a long and intimate acquaintance with the anatomy of the teeth, and of recent examinations of them with a view to furnish the remarks which I am now about to make for your Journal, I am prepared to say, that there is nothing about the teeth, their bony sockets and surrounding gum, which deserves the name of *ligament*. That there is no part of the soft structure which surrounds the teeth above the edges of the alveoli (call it by what name you will,) which serves to confine them in any remarkable manner in the jaw, or which prevents, in any perceptible degree, their being detached from their firm articulation with the sockets, in the case of an attempt to extract them. That this firm articulation of a tooth with its socket, and the corresponding resistance which is presented when we endeavor to dislocate it, depend, therefore, entirely on the intimate connection of the fang with the socket, by means of a strong intervening membrane, commonly called periosteum, on the form of the fang and socket, and on the thickness and density of the bony sides of the socket. And the part which is introduced as the *new ligament*, is nothing more than that portion of the gum which covers the transverse processes of the alveoli, united with the fibres of the periosteum above mentioned, and those of the partially absorbed capsular membrane which envelopes the crown of the tooth during its formation, and until it passes through the gum, all of which are united in a line about the neck of the tooth, immediately above the edge of the socket. And this is no more than has been known for a century at least, and may be learned from the works of Hunter, Blake, Bourdet, Fox, Thos. Bell, A. Serres, and many others.

There is, indeed, in some of the domestic animals, as the cow, sheep, hog, &c., much less of the appearance of bone about the sockets of the *front* teeth, than is found about those of man, the sockets of the former being composed more of a texture resembling a tough cartilage; yet in these the fangs of the teeth are secured entirely by the intervention of the same fibrous membrane—the periosteum.

Between the human teeth, in the mature state of either the infant or adult set, there is not room for the attachment of any ligamentous structure of sufficient magnitude or power to be of any importance in securing the teeth in their sockets, as may be seen by examining the jaw at the age of three years, or of twenty-five years. And all that can be found in the place said to be occupied by the *new ligament*, can be as clearly demonstrated to belong to one tooth as to the other, yet more justly to both; and in proportion to the thickness of the gum, as much ligament can be shown on the sides of the teeth which correspond to the outer or inner arch of the jaw, as on the sides which are in apposition, notwithstanding we are informed that the *newly discovered ligament* is situated only *between* the teeth, and is attached to but one side---the back---of the next tooth. In a word, the *dental ligament* has been brought up by a change of name, instead of a real discovery of any new part, organ or texture.

But further---admitting it to exist---you would ask, what is its practical bearing in the operation of extracting the teeth? From a full and fair examination on this point, by numerous operations, I am ready to answer, that there is no perceptible difference in the looseness of a tooth, after all the soft parts have been thoroughly severed from it, be they ligament or what you please, and before the knife or lancet has touched them; provided the bony socket and membrane are in a perfect state, or under that degree of inflammation only in which they are found previous to ulceration. If, indeed, the surrounding bone is nearly or entirely absorbed, the gum and periosteum of the fangs much inflamed and thickened, as is sometimes the case when, through fear of an operation, the patient has kept a diseased tooth for months or years, the division of these soft parts will remove all obstruction, and the tooth may be lifted away with the thumb and finger. But these cases are not very common, and have nothing to do with our question.

With regard to the pain produced in the different modes of operating, any man who is in the daily practice of extracting teeth may very soon satisfy himself that cutting round them, as a general practice, is merely inflicting needless suffering; for the use of the most improved forceps, without cutting at all, will give less pain, and the tooth is thus removed by one operation instead of two, with perfect safety and more despatch. The forceps are now in very general use, and when they are accurately made to fit the teeth, and skilfully applied, they give so much less pain than the German key in any of its varied forms, that there is no longer any reasonable apology for the dentist who does not abandon the use of this instrument entirely. In the dexterous use of the forceps, therefore, I conceive, if in anything consists the excellence of Mr. Caldwell's operations, and not in his peculiar "tact in severing the ligament," as is supposed by his friend, Dr. Goddard. And I have no doubt that if Mr. C. will lay aside his lancet, and defy the strength of the *ligament*, he will give more satisfaction and less suffering to his patients than he now does.

I beg your patience while I state a few brief questions, and I will trouble you no longer on this matter.

If there is a ligament of such strength and importance confining the teeth in the manner which the discoverers would represent, why does a tooth require the same apparent effort to dislocate it, after all the soft parts connected with it have been severed to the bone, as it would before this had been done?

To what is the *ligament* attached when the edge of the alveolus is absorbed, removing thereby the point of its origin, and leaving the neck of the tooth—the part into which we are told it is so strongly inserted—standing denuded the eighth of an inch or more above the gum. And why does this tooth stand firm under such circumstances, and require about as much force to remove it, and give as much pain in the operation, as if the bone and the *new ligament* were in their natural and perfect state, but because it is wholly supported and retained by the strong articular membrane—the periosteum of the fang and its socket?

When a tooth has been fractured or has decayed below the edge of the socket, why is it as firmly retained as when its crown and neck were perfect? There is no *ligament* here. Why does it give as much pain to extract it as if it were whole? The ligament in this case has been severed.

What holds the fang of a tooth so firmly to a portion of the outer plate of the socket, which has been drawn away with it by the use of the old key-instrument. Is it the ligament? No, that has not been discovered on this side of the tooth—yet the adhesion of these parts is so great that it will commonly require the aid of some steel instrument to separate them.

If the firmness with which the teeth are fixed to the jaw does not depend, as I have already stated, on the thickness and density of the bone, the form of the fang and socket, and the intimate attachment of the articular membrane; how does it happen, when this membrane becomes inflamed and thickened, and its vascular tissue weakened, that the tooth is loosened and lifted somewhat from its berth, and may be extracted with much less force than when the parts were in a healthy state? And why is it found, as this disease increases and the union between the periosteum and fang is, perhaps, partially destroyed, that the tooth is nearly ready to drop out, or may be taken away with the slightest effort? The *ligament* is not destroyed. It has hardly begun to share in the disease of the parts; for every practitioner in dentistry, of any observation, knows that the inflammation of the periosteum commences at the extremity of the fang and extends towards the crown of the tooth.

These are questions, involving truths, the knowledge of which every dentist of much experience must possess. Perhaps the discoverers of the *new ligament* can solve them. Yours, &c.

J. F. Flagg.

31 *Winter-Street*, *Boston*, *Feb.* 21, 1839.

The following is a Catalogue of the Dental Works placed by E. GIDNEY, Esq. at the disposal of the Publishing Committee.

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Hostoire Naturelle des Dents. qr.; Paris, 1821—Joseph Fox.
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Memoires de la Société Medicale, 8 vo. Paris, 1811—Head of Corvisart.
Première Dentition, 8 vo. Paris, 1806—M. Baumes.
Dental Surgery, 8 vo. London, 1826—Leonard Koecker.
Dentition, 8 vo. London, 1742—Joseph Hurlock.
Structure of the Teeth, 8 vo. Dublin, 1801—Robert Blake.
Practical Directions, 8 vo. London, 1825—Andrew Clark.
New Patent Extractor, 8 vo. London, 1826—J. P. de la Fons.
Parents Dental Guide, 8 vo. London, 1834—William Imrie.
Nat. History of Teeth, 8 vo. London, 1811—Joseph Murphy.
Teeth and Gums, 8 vo. Bath, 1825—M. Sigmond.
Artificial Palates, 8 vo. London, 1824—James Snell.
Diseases of Teeth and Gums, 8 vo. London, 1819—Charles Bew.
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Seconde Dentition, 8 vo. Paris, 1826—E. M. Miel.
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Anatomie des Dents, 8 vo. Paris, 1817—H. Serres.
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Manuel de Dentiste, 12 mo. Paris, 1822.—J. C. F. Maury.
Système Dentaire, 12 mo. Paris, 1820—G. H. Hilaire.
Arrangement des Dents, 12 mo. Paris, 1820—J. R. Duval.
Importance of the Teeth, 12 mo. Philadelphia, 1828—S. S. Fitch.
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Dents Incorruptibles, 12 mo. Paris, 1824—Dubois de Chemant.
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Maladies Chirurgicales, 12 mo. Paris, 1822—Boyer.
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do. do. 2nd tome, 12 mo. Paris, 1820—C. F. Delabarre.
Pathologie, tome 3, 12 mo. Paris, 1822—Joseph Lemaire.
L. Odontotechnie, 12 mo. Paris, 1825—J. Marmont.
La Formation des Dents, 12 mo. Paris, 1766—M. Jourdain.
Dix-sept Articles, 12 mo. Paris, An. VIII; Louis Laforgue.
Mouth and Teeth, 12 mo. London, 1823; J. C. Gerbaux.
Pathologie, tome 2d, 12 mo. Paris, 1824—Joseph Lenaire.
Surgeon Dentist's Manual, 12 mo. London, 1826—G. Waite.
Experiences, &c. 12 mo. Paris, 1746; M. Bunon.

Elemens D'Odontalgie, 12 mo. Paris, 1756; M. Jourdaine.
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Treatise on the Teeth, 12 mo. London; Barth. Ruspini.
La Beautè, 18 mo. Paris; L'Ami.
Hygiene de la Bouche, 12 mo. Paris, 1826; O. Taveau.
Recherches, &c. 12 mo. Paris, 1757; M. Bourdet.
Management of the Teeth, 12 mo. London, 1818; L. S. Parmly.
Le Chirurgien Dentiste, 12 mo. Paris, tome 1, 1746; Fauchard.
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Formation des Dents, 12 mo. Paris, 1766; Jourdain.
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Instructions, 12 mo. Paris, 1811; J. L. Riviere.
Five Minutes' Advice, 12 mo. London, 1833.
Manuel, &c. 12 mo. Nancy, 1809; M. Maggiolo.
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THE AMERICAN JOURNAL

OF

DENTAL SCIENCE.

VOL. I.—NO. II.

REMARKS ON PROFESSIONAL MORALITY.

[BY SOLYMAN BROWN, A. M.]

To men of high-toned sensibility, animated by that "*esprit du corps*" from which much of the energy of human action, and still more of the enthusiasm of human feeling, result, it can be matter of no trifling moment that the profession to which they belong—with which they stand associated in the public mind—and from which they derive a livelihood, if not a fortune, should be at once respectable and respected, and so far removed from any general and well founded reproach as to rank among the varied avocations of society according to its positive utility.

The profession in which the practical dentist is engaged, is one so generally in demand—so endeared to community by the relief which it brings to human suffering—and requiring so much skill and talent to elevate it to its possible perfectibility, that nothing but the character of its professors has restricted its influence and usefulness in ages past, or shall in times to come, mar its reputation, or circumscribe its emolument.

Dentistry in its improved forms, is one of those new sciences by which the present age is distinguished—and although we have reason to suppose it had attained to some celebrity in the Augustan age of Rome, we may well ascribe to our own times, and even to the present century, the highest advancements in our art, known to authentic history.

No sooner is it discovered that any art or science must of necessity be incorporated in the texture of society, than it becomes demonstrable that its successful pursuit will be a permanent passport to fame and fortune; and when this was ascertained to be the condition of our professional science, it was not to be doubted that numerous adventurers would flock to its temple. This reasonable suspicion has been amply verified in the fact, that there are now almost a hundred individuals calling themselves Dentists, in the city of New-York alone. But such a fact would only betoken the prosperity and popularity of our art, and therefore become a subject of congratulation among its honorable professors, were it not one of the results of this great accession of numbers, that much professional incapacity and great moral delinquency of character, become thus connected with our calling.

It is quite true that all other professions of equally recent institution, are liable to the same inconvenience; and even those the longest established, however honorable and useful, do not entirely escape it.

The science of Medicine and Surgery, so much akin to our own, has its quacks and mountebanks, as the newspapers of the day, and the dupes of their prescriptions too amply testify. Nor is the most sacred of all human functions wholly preserved from the charlatanism of voluntary ignorance and graceless presumption. There are quack doctors in the desk as truly, although we hope not as frequently, as in the laboratory, and the effects of their nostrums cannot be less disastrous.

Since, then, both that profession which consults the health of the body of man, and that which should cultivate the welfare of his soul, are alike disgraced by charlatans, let us not suffer ourselves to be wholly inconsolable, because quackery, with its detestable allies, Ignorance, Recklesness and Ostentation, has polluted the threshold of the temple in which our favorite science sits permanently enthroned. Let us rather submit as gracefully as possible to the necessity of our condition, finding some consolation in the fact that all human avocations are subject to equal disadvantage, and allowing ourselves to be especially gratified in reflecting that time will, in some measure, correct the evil. The process of fermentation must, for a while, elevate froth and filth to the surface; but the liquor beneath becomes purer and better as it stands ripening upon its lees!

It is our duty, as good citizens, to labor *collectively*, as well as individually, for the elevation of our profession in character and in usefulness.

It will be my design to show, if indeed it be not manifest already, that the usefulness of our art can never become general, much less universal, until the standard of *professional morals* shall be greatly elevated, and this happy change become known to community at large. I should willingly excuse myself from the painful duty of calling the attention of my brethren too particularly to those deep stains upon the character of our profession, by which the confidence and respect of the public have been so sadly shattered, if I were not fully apprized of the willingness of all good men, to look at the evil in its utmost enormity, and their determination to adopt a remedy co-extensive with the disease. We have all felt keenly the deepest chagrin and indignation at being suspected in our veracity, merely because we are connected with a class of individuals in whose moral character and professional habits, mendacity is a predominant ingredient. How mortifying to a generous mind to be classed in even the remotest alliance with men whose tongues may well be festered by the falsehoods which they utter!

I must entreat my readers not to charge me with undue or unwarrantable warmth on this occasion. With such a theme the language of indignation can scarcely become intemperate. For my own part, I should deem myself justified if such a thing were possible, in selecting on this topic, from the vocabularies of human language, such burning words as should scorch the lips that uttered, and the ears that imbibed them.

To those among us who have been long in the profession, or who have been otherwise for many years conversant with the history of Dentistry throughout these United States, the many dishonest arts by which the public have been disgusted and abused, are already known. Every practitioner becomes acquainted with histories of baseness, related by his patients, which well nigh cause the blood to curdle in his veins; and although some allowance is always to be made for exaggeration and misrepresentation on the part of the accusers, there can be little doubt of the general truth and propriety of their complaints.

Our memories are still fresh with the recollection of those splendid hum-bugs, the Messrs. Crawcour, who made so successful a requisition of some thousands of pounds of their own sterling currency, upon the purses of our fellow citizens, for having imported from England a more direct and explicit method of applying mercury to the destruction of the teeth, than that so successfully practised by our native quacks through the medium of the circulating system. And I am pained to hear that this execrable material is still used by some unprincipled men in this country, and by one who has recently left this country, and is now practising in one of the West India Islands, who has the dishonesty to use it under the disguised name of "*paste*," to which he has affixed a fine and distinguishing appellation, and the effrontery to say that it is used and approved by the first dentists among us. Such high-handed impudence and villainy, cannot long escape the punishment it so richly deserves.

And here let it not be said that the folly of our fellow citizens was but too manifest in this "*coup de grace*" of these gasconading empyricks—for it should never be forgotten that the simplicity of the dupe is no palliation of the guilt of the deceiver. But these graceless gallows-hunters have been scouted from our shores, and we are left to grapple only with the minor spirits of this disgraceful "*coterie*."

Let us, then, turn for a moment, to the habits and practices of some of our countrymen, who desecrate the name of Dentistry by their daily conduct.

What, think you, of a man who will not only advertize himself as the manufacturer of incorruptible mineral teeth, but seek and fraudulently obtain a premium at the Annual Fair for such manufacture, notwithstanding he never made so much as one such tooth in his life? Can you esteem such a man as a whit more honorable than he who publishes to the world the falsehood that he belongs to a Dentists' Society which never had existence?

What think you of him who, in this age of science and mutual interchange of knowledge, can gravely assure his patients that he is the original discoverer and only manufacturer of Creosote, the well known and abominable result of the distillation of tar?

What shall we say of the astonishing chemico-dental discoverer, who has found among the products of his laboratory, a demulcent elixir, by which, in a moment he can so soften the texture of the soundest tooth as to be able with a pair of pliers, to bend it in any desired direction, and to any required extent? Can we consider this successful alchemist as greatly surpassed by that other son of genius, who adapts artificial teeth to all the useful purposes for which these organs are designed, on the truly philosophical principles of capillary attraction and atmospheric pressure!

What shall we say of a Dentist who will extort a hundred and sixty dollars from an unprotected female from a remote section of our country for work executed at a single sitting, and in the compass of three hours, merely because she was too polite to ask his prices, and higgle for a penny, before the work was commenced?

And finally—how shall we classify, if not among quacks and impostors, the man who can wish to persuade the credulous multitude, that he can extract the teeth of men, horses, and wild boars, without pain or effort, by the simple use of a rusty jack-knife or a two-penny whistle?

But I will not weary you with examples of odious imposition, by which the annals of Dentistry are daily polluted. Let us rather ascend from particular instances to general principles, and inquire for that code of professional morals which should regulate our intercourse with our fellow men.

I will not allow myself to doubt for a moment, that each of my readers will admit the validity and binding force of the only moral rule which can be considered as the universal and unexceptionable law of genuine charity:—namely, "That we should do to others precisely as we would desire, and could reasonably require others to do to us in exactly corresponding circumstances." I say, this law in all its bearings,—"gradations just, and nice dependencies,"—is the divine law of social benevolence, and there can be no immaginable case in which it will not properly apply to the conduct of every rational individual.

Our daily calling which brings us into constant intercourse with our fellow men, is the proper sphere in which this law of love should operate; and he who imagines that charity and high toned christian morals are very becoming in our religious connexions, and in our domestic relations, but have little to do with our business transactions—they being of a worldly nature—has, in my opinion, lost the immortal substance of true religion by grasping at its pale and meagre shadow! In truth, every bargain which we negociate, and every charge which we make in the ordinary current of our daily business, should be habitually subjected to the mental inquisition,—"am I doing to others as I should reasonably desire others to do to me?" There is no safe subterfuge, no possible escape from this conclusion. The subtle sophistry of self-love cannot countervail; the soporific elixir of moral apathy cannot neutralize it. It stands recorded in words of light, and they cannot be too brightly written on every heart.

This then is the law—and in spite of all voluminous and learned commentaries by which its spirit may be assailed, it will never be dissipated from the good man's mind; but will remain the rule of duty, and therefore the law of happiness forever.

Human laws may indeed be less rigid, because they cannot reach the heart; but human laws—mere legislative enactments, regarding only the outward conduct, will never be the standard of morals with any individual who has a loftier ambition, and a nobler aim, than merely to escape the present punishment of his crimes.

It would be very easy for any one intimately acquainted with the details of dental practice, to apply this rule of action to numerous examples; and there is no profession in civilized society, those of the physician and clergyman perhaps excepted, in which the operations of this rule come home more directly to the interests of mankind, than that in which we are engaged. Ours is not a profession that ministers merely to the folly and vanity of mankind; that aims at exalting one man above another in splendor of equipage and tinsel of embellishment; that labors to create artificial distinctions in society, in order that the great may oppress the small; that contrives to concentrate all the floating wealth of the community into the hands of a few rapacious individuals who shall be thereby entitled to riot on the hard earned products of honest labour: the province of our art is more generous and noble; it wipes the tear from the cheek of beauty; extracts the pang from the mortal frame writhing with agony; and, if it gives not bread to the hungry, it enables the hungry to eat, and the dyspeptic to appropriate that bread which Providence has given them. Ours is a profession, which, if properly conducted, might be brought home to the happy acquaintance of every family in Christendom. The rich and the poor might all be induced to esteem it as equally essential to the well being of society, as that of their well beloved physician, or of the surgeon who wounds but to cure.

It may then be safely averred, that the above law of charity requires the Dentist often to exercise his professional skill, and devote a portion of his time to cases from which he receives little or no pecuniary emolument. The physician and surgeon often do this; and why should the dentist be exempted from the same duty?

There are instances in the professional experience of every dental practitioner, in which it would be barbarous to send away a patient without affording relief; and worse than oppressive to receive any pecuniary reward for his services. Although money is the god of this world, yet there are many opportunities presented to men of all professions, of worshiping the God of universal nature in the form most useful and acceptable, by doing good to others without reward.

This species of charity, however, is confined in most instances, to the relief of actual suffering, and applies not to that portion of a dentist's practice which may be supposed to respect mainly personal appearance. Of this distinction, every practitioner must be his own judge, since no other person can determine for him the exact point of duty.

Will there be thought to be any thing strange or peculiar in the circumstance, that the conscientious practitioner of our art should find frequent opportunities of performing acts of legitimate benevolence in the course of his professional practice? Is it not the purpose of Divine Providence that every condition of human life should present such opportunities of exercising the benevolent affections; and of thus imitating the celestial Benefactor who has freely given the riches of the universe to the creatures of his power?

Again. The honorable dental practitioner will adopt such a tariff of charges as will not be extortionate, or disproportionate to the profits of the other professions on the one hand; nor degrade his calling to the level of a vulgar art, on the other.

This proposition will be readily perceived to result from the general law of professional morality, to which we have already alluded.

It may perhaps be said that where a profession is untramelled by legal monopoly, and thus open to fair competition, there can be no extortion in demanding the most exorbitant prices, provided the parties be apprized beforehand of the expense to be incurred. The truth of this position I am not anxious to impugn; nor do I by any means object to the respectable charges made by those honorable gentlemen of our profession, who have raised themselves to an enviable distinction as well in fame as fortune, by their talents and their virtues.

But these concessions do not require me to abandon my proposition, that the honorable practitioner will neither be oppressively high nor meanly low in his professional charges. Either of these extremes would bring detriment to society, and therefore would be contrary to genuine charity; because, very few individuals compared with the mass of community, could afford to pay exorbitant prices, and still fewer would be benefitted by our profession, if it were exercised by those persons only who would labor for a mean compensation.

I shall best express my meaning on the subject of extortionate charges, by alleging an instance which occurred in the city of New-York within a few months past, and which was related to me by the highly respectable individual who was the intended victim of outrageous extortion.

A lady from a Southern city, induced by the flaming and flagrantly mendacious advertisement of one of the Dentists of N. York, called upon him on her arrival in town to inquire the price of a double set of artificial teeth. After learning the object of her visit, and ascertaining that she was a stranger in the city, from one of the cotton planting states, he assured her that his regular price for such a set of teeth was *fifteen hundred dollars!* I hardly need remark that such a demand, whether made before the work was done or after it was completed, was equally wicked and extortionate, and can rank in no better society than Fraud, Impudence and Quackery.

The enormity of the crime of extortion in our profession, in those instances in which the prices are unknown until the work has been completed, is enhanced by the fact, that persons of sensibility, and especially delicate females, are deterred from that redress which an appeal to the laws might give, by their aversion to exposure on such a subject.—The man, therefore, if indeed I do not vilify the race by calling him a man, who could stoop to acquire his livelihood—and much more to amass a fortune by such ill-got gain—would have been a bandit among the Appenines, or a pirate on the ocean. He would deem himself honored by being the hangman at Tyburn for a shilling a day; and would have gloried in distributing the poison *gratis* in the holds of the British prison ships during the war of our revolution. To such a man, the voice of truth indignantly exclaims, "Oh, full of all subtlety and all mischief, thou enemy of all righteousness, and thou child of the devil," when wilt thou cease to be a Quack and a Villain!

But I must suppress the sentiments of detestation so amply excited by those vagabonds, who bring indellible disgrace upon our calling, and proceed to remark, that the opposite evil of regulating the tariff of charges on so mean a scale as that competent, respectable and well bred men, could not afford to follow the profession, is sufficiently manifest; and we have all learned in our intercourse with our patrons, that the public are perfectly willing to reward the skilful dental surgeon as liberally as they do their physician, their lawyer, or their clergyman; as some of the members of our profession have learned by happy experience.

Once more. A just regard to professional honor, demands of the dental surgeon the most scrupulous punctiliousness and care in performing every operation in such a manner as he would himself wish and expect in a change of circumstances in which he were the patient and his patient the operator; or, were his wife or his child the subject of his treatment. Inordinate self-love is indeed little prone to institute such comparisons, but genuine morality requires it. When an individual with respectful confidence surrenders himself to the treatment of the Dental operator, he commits to him an important trust with an implied, if not an expressed stipulation, that it shall not be violated. No matter whether the patient demand verbally or not that the case shall be treated with the operator's best skill and judgment; no matter whether the subject be rich or poor, distinguished or obscure; the fact that he is a fellow creature, as fond as ourselves of health and happiness, entitles him to the full benefit of the moral precept we have learned from the Divine Law-giver. The love of gain should never beguile us so far from duty as to induce us to perform an operation when it is not required, merely because a patient requests it. Individuals often request an operation in their own case, which it would be mal-practice to perform; and even parents not unfrequently solicit the extraction of the first teeth of their children at a period when the safety of the second set would be endangered. In all such cases the practitioner's sense of propriety, and not the opinion of others, should be his guide.

The teeth are of so much importance to the well-being of the animal system, that all operations upon these organs should be performed not only with discretion but in good faith; and I can imagine no better rule of practice than to perform the duties of our profession in every instance as we would wish them performed were the case our own.

I proceed to remark, that a benevolent regard for the public welfare, forbids that any dentist should pretend to qualify students for general practice, by giving access for a few weeks only to his office, and a general certificate of skill and competence. The truth is, the profession of Dentistry is both an art and a science; an art that requires great mechanical skill, and a science demanding much mental cultivation. Such an art never can be acquired without long practice, especially by one who has not been bred at some kindred calling:—and such a science should claim years of research and general mental culture; particularly of those whose previous education has not been strictly if not technically preparatory.

Most other professions are protected either by statute or organized associations, from the encroachments of incompetence and imposture.—Ours is guarded by no civil enactments, and of consequence, the members should supply the defect either by their individual or collective efforts.

To effect so desirable an object, was one of the leading motives in the establishment of this JOURNAL.

The fact that a few individuals have acquired reputation and emolument by an extensive Dental Practice conducted with talent an integrity, has induced many adventurers in these days of experiment and speculation, to rush hastily, and therefore unprepared into the lists of competition for public patronage; but there can be no reasonable doubt that to this state of things time and experience will apply a remedy. At any rate, it becomes the duty of every honorable practitioner to abstain from any acts that may augment the evil, how pleasing soever it might be to have either the reputation or the profits resulting from the office of instructer.

Again. Genuine professional morality requires of us to treat the good name of our fellow labourers in Dental Practice, with all the kindness and candor which we solicit for ourselves. We should neither feel nor act as the *rivals* of our brethren; but as *neighbours* in that sense of the term in which it was applied to the good Samaritan. For the exercise of this species of good will, there is constant occasion in our daily intercourse with patients and others; and this frequency of recurrence, in any charity, imparts to it superior importance.

But this rule does not require us to recommend or eulogize those men calling themselves dentists, who are in the known habit of abusing the confidence of others. To speak in exalted terms of such men, would be to confound virtue and vice; and, therefore, would be no charity; because it would be the means of beguiling the innocent to certain disappointment. There can be no virtue in assisting one man to impose upon another.

But of those individuals who are labouring with honest zeal, and employing creditable and useful talents in our art, for the honorable purpose of performing their social and domestic duties, I would always speak with the tenderest regard, and the most affectionate good will.

That narrow-minded jealousy which has so long and so notoriously disgraced the kindred profession of medicine and surgery, should be utterly repulsed from every good man's mind. If we see others even more successful than ourselves in the performance of extensive uses, as well as in the pursuit of fame and fortune, we should imitate the noble Roman who, when an unsuccessful candidate for the office of Decemvir, manfully replied to his wife, who informed him of his failure, "Well, my love, I am sincerely rejoiced that there are ten men in Rome better than myself."—Happy in his Elysian Fields is that generous spirit which felt on earth so nobly! And shall we, my brethren, who have been lighted in the path of truth by the Star of Bethlehem, suffer ourselves to be surpassed in high morality by Pagans?

Let us not forget, that, whether he reside in a Heathen or a Christian land, that man is but a sorry philanthropist, who finds not a portion of his happiness to consist in witnessing the prosperity of others.—

Nor let us ever cease to despise the wretch who would wantonly employ the authority of his opinion to degrade his professional competitors.—Such a man deserves a solitary cavern in the mountains of the moon.

Finally—It is the charitable duty of the honorable dental practitioner, to impart to others who are worthy,any valuable improvements and useful discoveries which he may make in his art. It is one of the distinctive traits of quackery to have—or pretend to have—professional *secrets*.—Knowledge in all those departments of science or of art, in which the public good is intimately involved, should be as free as the sunlight and as universal as the atmosphere.

Let us, then, once for all, settle it in our minds, that he who deals in nostrums of which the mystic ingredients are known only to himself; who boasts of performing the manipulations of his art with a skill of which he alone is possessed; who performs secret wonders known only to his fortunate and grateful patients; and who deals in mystery and concealment as though they were the distinguishing attributes of genius, is wholly unworthy of any of the liberal professions.

One of the fundamental principles of genuine science, is a community of truth; and I rejoice that those members of our profession who have had the most varied experience, and who enjoy the highest reputation, have been unreservedly liberal in this behalf. It is fondly hoped that the "AMERICAN JOURNAL OF DENTAL SCIENCE," will for years to come, afford to such men the means of doing good which is the true felicity, by giving popularity to knowledge which is the sister of virtue.

CLEANLINESS OF THE TEETH,

Its importance to their health and preservation, and the means necessary to its accomplishment.

[BY C. A. HARRIS, M. D.]

The importance of a proper attention to the cleanliness of the teeth, is to the profession too well known to need comment; the remarks, therefore, which we design making upon the subject, will be intended more for the benefit of the general reader, than for that of the practitioner of dentistry; and to him it would seem almost superfluous to speak particularly, were we not apprized of the great diversity of opinion that exists among those who have never made the diseases of these organs a matter of much enquiry. By the educated and refined, its utility is pretty generally acknowledged; yet there are a few, even among this description of persons, who regard it as decidedly injurious, and as an evidence of the correctness of their views, we are referred to individuals fifty, sixty, or perhaps even seventy or eighty years of age, whose teeth are perfectly sound, that have never paid any attention to their cleanliness; and to others, not more than eighteen or twenty, that were known to be frequent and regular in its observance, with deplorably bad ones. To a person unacquainted with the differences in the liability of the teeth of different individuals to become diseased and the causes that produce them, this might seem to be a very conclusive argument; but to one having a knowledge of them, it only proves, that in proportion as these organs are hard or soft; that their power or capability of resisting morbid impressions is increased or diminished. Hence, teeth, that are very hard, rarely decay; whereas, those that are soft decay from the most trivial causes; and thus it is, that some occasionally retain them to an advanced period of life, while others, and that too, very frequently, lose them before they arrive at any thing like what is usually denominated middle age.

It often happens, however, that persons who are possessed of the hardest kind of teeth, lose them early in life by the destruction of the means of their support; and it is worthy of remark, that the loss of the teeth in this way is generally confined to those who pay little or no attention to their cleanliness. With those who are, and have been from early childhood, in the frequent and regular observance of this, such an occurrence rarely if ever happens; and the reason is obvious:—By cleaning the teeth regularly, two or three times a day, the formation of tartar is not only prevented, but such particles of food and other extraneous matter as lodge about and adhere to them, and which, when permitted to remain, soon become putrid, vitiating the juices of the mouth, and causing them to irritate and inflame the gums, and in consequence, to be absorbed, together with the alveoli, are also removed. That there is a greater tendency in some than others to disease of the gums, we do not deny; but this, by proper care and attention might, we believe, in almost every instance, be counteracted. Our opinion, therefore, is, that the gums, if the teeth be kept *perfectly* clean, seldom become spongy or recede from their necks; and that teeth, that are situated in healthy gums, rarely, if ever, loosen much in their sockets.

If this, then, be true—and that it is we are firmly pursuaded—the importance of a strict observance of the purifying of the mouth, cannot, if for no other purpose than the keeping of the gums healthy, and the prevention of a consequent loosening of the teeth, be too strongly urged.

As a prophylactic against diseases of the teeth themselves, or at least of their crowns, it is also powerful—we might, perhaps, say certain—for, were it possible to keep them perfectly clean, we believe they would never decay. But this, literally speaking, is hardly practicable. The enamel on the sides of the teeth that come in contact with each other, is often fractured, and within these fractures, and the indentations on the grinding surfaces of the bicuspides and molares, a lodgment is afforded to small particles of extraneous matter, and the secretions of the mouth that cannot, by any of the ordinary purifying means, be reached, and thereby remaining there until vitiated and putrid, exercise upon the parts with which they are in contact, an exceedingly hurtful influence. But were it carried as far as it is practicable, the teeth would be much less frequently affected with disease; in fact, we do not believe there would be more than one decayed tooth, where there are now half a dozen; and in this opinion we are convinced, that every one whose attention has been much directed to the subject, will fully concur. It is one to which we have paid much attention; and the result of our observations is, that those who do, and have from early youth attended to the cleaning of their teeth frequently, regularly and thoroughly, have altogether and by far better ones than those who have neglected it, or who, if they have attended to it at all, have done it at irregular and uncertain intervals. This we have noticed in families, and in those parts where the members resembled each other in features, constitutional temperament, and in the shape, size, colour and arrangement of their teeth, and our enquiries in almost every instance, have tended to the confirmation of this opinion. Nor could it be otherwise; for upon the presence of putrid foreign matter and vitiated mucus and saliva, does most of the diseases of these organs depend.

The fact, then, that cleanlines of the teeth is essential to their health and preservation being established, a motive sufficiently strong for its observance is no longer wanting. But were this not the case, others, though comparatively of much less weight—but which with many may have a greater influence—might be urged. Of these, the principal and only ones which we at this time propose to notice, are personal appearance and comfort, and upon them we shall offer but a few remarks.

To a pleasing and agreeable expression of the countenance, a clean and healthy denture is of the greatest consequence. Even if the teeth lack that *perfect* regularity of arrangement which it is desirable that they should have, if they be but free from tartar, viscid mucus and extraneous matter, their appearance will never be disagreeable; but if any of them, and more especially those occupying the anterior part of the mouth, be discoloured or covered with clammy mucus or tartar, or any other kind of foreign matter, they will rarely fail, however perfect all the other features of the face may be, to give to the countenance an unpleasing aspect.

However scrupulously particular persons of either sex may be in regard to their dress, and although they may be decked with jewels, and sparkle with diamonds, if they at the same time be unmindful of a proper attention to the cleanliness of their teeth, they will fail to excite in individuals of refined taste, those feelings of admiration which most desire to elicit, and which these organs when the requisite care has been bestowed upon them always attract.

And as essential as this is to personal appearance, it is equally so to comfort; and this of itself ought to be a sufficient inducement to the regular observance of such means as are necessary to its accomplishment; but so remiss are some persons in regard to it, that they allow their teeth to be constantly covered with putrid extraneous matter, and their breath, in consequence, to be so offensive as to render their proximity to another a source of the greatest annoyance. The frequent and thorough cleaning of these organs is of the greatest consequence to a pure breath, and those who neglect it, breathe a more or less contaminated air, which, although it may not be obvious to themselves, is very perceptible to others. It is also requisite to health, for in proportion as the teeth are unclean, especially those of persons who have delicate constitutions, is the appetite impaired and the digestive organs weakened; and thus the capability of enjoying life is often greatly diminished. But to enter into an explanation of the manner in which the health of the general system becomes affected by the want of a proper attention to the teeth, constitutes no part of our present purpose; it may, however, from what has been said in regard to its effects upon the organs themselves, and upon the gums and alveolar processes, be very readily inferred.

Having now shown the importance to the health and preservation of the teeth, of keeping them constantly clean, we shall proceed to describe the manner by which it is to be effected, premising, that if they or the parts within which they are contained, be diseased, such means as are necessary to their restoration to health, should first be resorted to This done, all that will usually be required to keep them clean, will be a tooth-pick, a brush, and pure water. The first of these should be constructed from a goose-quill, and should always be used immediately after eating, that such particles of food as may have gotten between the teeth, may be removed before they shall have undergone a chemical change. As it regards the kind of brush most proper to be employed, there exists a considerable diversity of opinion; some prefer a very hard one, others think a brush cannot be too soft; whilst others again, give their preference to a medium one, and to this last our own is decidedly inclined. A tooth brush should be neither too hard nor *too* soft, but of these qualities the last is least objectionable, and for a child is perhaps preferable to any other. The bristles should be about one half of an inch in length, and be elastic, so that they may be made to reach and act upon all the inequalities of the teeth, and with such a brush as this, and water, they should be thoroughly rubbed several times a day: say, for instance, in the morning immediately after getting up, and after every meal. This purifying process should be commenced in early childhood, and if it be carried to a sufficient extent, it will prevent the teeth from becoming stained or discoloured, and keep the gums healthy.

Dentifrices, such as powders, lotion, &c. are only called for in the treatment of diseased teeth and gums, therefore, of them we shall say nothing at present.

PREMATURE DENTITION.

[BY SOLYMAN BROWN.]

As grave historians have thought it a fact worthy of record, that Louis XIV was born with a tooth manifesting itself through the gums, which was esteemed by many as a token of his future greatness, and as it is now known that such an occurrence is far from being either wonderful or miraculous, I shall give an instance which has come within my personal knowledge, of a lady among my patients, who has had three daughters born with two teeth each.

The mother, who is a highly respected and intelligent lady of this city, lately presented me with one of these teeth, which was fully developed at birth; and which was extracted under the popular belief that such teeth incommode the mother in lactation. Subsequently, two others of her children had at birth a similar developement of the lower central incisors, which were suffered to remain through the entire period of lactation without the slightest inconvenience to the maternal nurse. These facts may serve to regulate dental practice in similar circumstances by teaching that such teeth may be suffered to remain with perfect safety in all cases where they occasion no inconvenience.

ANATOMY OF THE TEETH OF MAN AND ANIMALS,

BY PH. FR. BLANDIN,

Surgeon of the Hotel-Dieu, adjunct Professor of the Faculty of Medicine of Paris, etc.,—With Plates.

Translated from the French, with notes and general observations,

BY HARVEY BURDELL, M. D.,

Author of "Observations on the Anatomy, Structure, Physiology, and Diseases of the Teeth."

To the Editors of the American Journal of Dental Science.

Gentlemen :—

The above is the title of a work on the teeth, that I have in course of translation, from which I take the liberty of sending you several extracts, which if deemed worthy of a place in your valuable Journal, you are at liberty to publish.

The translator is fully aware of the many disadvantages under which he labors, in being obliged to abridge many of the philosophical doctrinal positions taken by the author, in order to adapt them more directly to the limits of a Scientific Journal. He trusts however, that the brief extracts he shall furnish from time to time, will not be uninteresting to the practical dentist.

It is not the translator's intention to publish the whole of Blandin's work on the teeth in this form ; but only to present some of the important facts, and the new theories he has advanced, to the consideration of the members of the dental profession.

Professor Blandin has arranged his admirable and comprehensive treatise on the teeth, with great care, and in a very judicious manner. In the first place, he gives a general sketch of the history of the dental art, and of the advances made in this science from the earliest period to the present day ; he then gives an outline of the practical science of dental anatomy and dental surgery, and he also with much erudition describes the physical structure of the teeth of the human species. He concludes his labors by explaining the mode of development, arrangement, uses, &c., of these organs in various animals.

HARVEY BURDELL.

It will be necessary, (says the author) in giving the historical examination, to adopt some order of arrangement ; and I shall therefore, divide the historical portion of this work, into different periods, which will assist the reader in collecting other facts connected therewith. It will likewise be advantageous to myself, for it will furnish a kind of *halte*, by which I shall be assisted in these tedious and difficult researches.

HISTORICAL SKETCH OF THE PROGRESS OF DENTAL SCIENCE.

FIRST PERIOD.

Of the progress of Dentistry in Egypt, China and Greece, to the time of Aristotle.

According to Herodotus, the dental art, as well as the anatomy of the teeth was known to the early Egyptians, and the scientifiic pursuit of dentistry was followed by a certain sect, who had been educated to the profession.

In a report on the examination of an Egyptian mummy,* which M. Villeteau communicated to M. Sylvestre de Sacy, it is stated that the teeth were perfect, and not in the least affected by disease, although considerably worn away. It is also stated in this report, that even at the present day, the natives of Egypt have remarkably fine teeth, which are preserved to the extremest old age.

These are all the facts that I can gather in reference to the teeth and the history of Dentistry in Egypt, the cradle of the human sciences, and this I have been obliged to ask of silent tombs and mummified corpses.

In China, the science of anatomy has made but little progress, and the diseases and structure of the teeth are not studied. This is not surprising, when it is considered, that the Chinese never dissect the human subject; for they consider it an act of base cruelty to open a dead body, and they cannot even look upon human bones except with fright and horror! They however classify animals according to their external characteristics, and the teeth therefore, are of much service in the arrangement of the zoological divisions.

I have not been able to obtain much information, on the subject of the teeth, from the early history of Greece; for time, during the lapse of so many centuries, has destroyed almost every historical record that may have once existed; and all that I can find worthy of note, is in the philosophical definition given by the classic Homer, which is as follows:— The teeth says he, are *small barriers, placed in the mouth by nature, to prevent the tongue from going astray, or the abuse of words.* Eristratus however, mentions a tooth extractor, (odontagogue) made of lead, which was suspended in the temple of Apollo, in order, as it was said, to indicate that the teeth should not be extracted, except when so loose that none but an instrument of lead need be employed in removing them [*]

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* Embalming bodies after death, was practised by the ancients centuries before and after Christ. from a belief that the vis vitæ or soul. returned after a certain period, to again inhabit the mortal tenement in a new and immortal capacity and to thus dwell where happiness and pleasure would be complete, among the beautiful and romantic fields of Elysium. H. B.

We must refer to the writings of the Greek philosophers for positive knowledge in reference to the teeth, and this we find among the writings of Hippocrates, or at least the views entertained respecting them.

Hippocrates says: "Frigidum inimicum ossibus, dentibus, nervis, cerebro, dorsali medullæ; calidum vero amicum." Several authors have concluded from the preceding statement, that Hippocrates distinguished the teeth from the bones; but is this understood or expressed in the foregoing quotation? It is more probable that Hippocrates merely wished to indicate, that the teeth, like the bones, are particularly injured from the effects of cold. He states, however, in another place, that the teeth are bones, or at least analagous to them.

He also states, that during the phenomena of dentition, much can be foretold, as to the future health of the individual, and that the teeth exhibit peculiarities in several diseases. He asserts positively, that the teeth or the rudiments of both sets, can be discovered in the fœtus. He speaks of the wisdom teeth, σωφρονιστηρες and agrees with other authors, that an extra number of teeth, is a sign of longevity, which is expressed in the rest of his text: Οι μαχρυσιοι πλεισους οδοντας εχουσι. He also said, that the irritation or inflammation in the teeth and gums of a female *enceinte*, was an evidence or symptom of super-fœtation.

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Second Period.

From Aristotle to Galen.

Aristotle, that superior genius, was deservedly celebrated during his age and generation, on account of his knowledge of medicine and anatomy. He was the first who devoted himself to the study of the teeth, and he was likewise the first who duly considered them as peculiarly characteristic of the various classes of animals.

Among the writings of Aristotle, gross errors prevail, and many untenable theories are advanced; yet we nevertheless obtain in perusng them much valuable information. He wrote 350 years before the era of Christ. In order to trace the progress made in this department of science, from the age in which he lived down to the present period, it will not be out of place to give a general outline of the science at that time.

Aristotle says that the teeth present marked differences from man down to the lower order of animals; and that the different species of the latter, more particularly those called viviparous, have teeth as well as red blood, although the former do not exist equally in both jaws. Horned animals have no teeth in front of the upper jaw, but there are some that have neither upper front teeth nor horns, the camel for example.—Some animals have teeth projecting outward from the mouth, like the boar; others have them all pointed, like the lion, panther, dog, &c.; among others we see them flat and blunt, like those of the ox, horse, &c. No animal, it will be observed, has at the same time projecting teeth and horns, and not any of those that have teeth pointed, have either projecting teeth or horns. Aristotle calls all projecting teeth, *tusks similar to those of the Elephant.*

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[*] In reference to this lead tooth extractor, much has been said and written. All the speculative controversies however, on this point, appear to have been based on the following quotation from an ancient classic work: "Erasistratus, plumbeum inquit odontagagum, quod nos dentiducum dicere poterimus, apud Delphum, in Appolinis Templo, ostentationes, causa propositum, quo demonstratur oportere cos dentes auferri, qui sint faciles, vel mobilitate laxati, vel quibus sufficiat plumbei ferramenti conamen ad summum." There is not sufficient evidence that such an instrument was ever exhibited in the temple of Apollo, as it has been pretended, and it is very probable that the preceding statement is founded on some fabulous story. H. D.

As a general rule says he, the teeth in front of the mouth are sharp and pointed, while the back ones are broader and wider. This rule, however, will not always apply, for the teeth of the seal are all sharp and pointed; hence this animal seems to connect quadrupeds with fishes.

Aristotle says, the teeth of the Elephant are their weapons for self-defence. He also says, that the front teeth are shed, in the human species; that the grinding teeth are not shed in man or animals; that the hog does not shed any of his teeth; that the age of many animals is known by their teeth; that the teeth become darker as age advances, except in the horse, whose teeth as they grow old become whiter.

Aristotle agrees with Hippocrates, that the appearance of more than the ordinary number of teeth is a presage of long life, and that those who have less than the usual number are generally shorter lived.

Men, says Aristole, have more teeth than women, and it is observed in some of the lower order of animals, that the males have more teeth than the females. It is a little surprising that such errors should have been promulgated by Aristotle, unless his texts have been altered, or as some suppose that he was only the historian, and recorded facts as well as fables, not being himself a practical anatomist.

He says the bills of birds are their teeth, and that they are analagous to the nails and horns, yet he contradicts his own argument in stating that the teeth are organized like the bones. * * * * To explain the only difference between teeth and the bills of birds, he says the former are shed, while the latter are not.

From Aristotle to Galen but little progress was made in the Dental art. It is however probable that Herophilus and Erasistratus, those two stars of the school of Alexandria, wrote on the subject of the teeth; but if such was the fact, their doctrines are lost, or at least have not reached us.*—It is said that Celsus wrote on the diseases of the teeth, and of the opera-

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*Herophilus and Erasistratus were the first systematic dissectors of the human subject The age in which they lived is not precisely known, but it is supposed to have been during the reign of Alexander the Great. Previous to the investigations of Herophilus and Erasistratus it was generally believed, that the amputation or removal of any material portion of the body, would prove fatal, but the experiments made by these *bold* surgeons changed the popular belief. We are informed that criminals after being condemned to death were handed over to Herophilus and Erasistratus by order of Alexander the Great, for them to try experiments upon, for the benefit of physical science, and they accordingly commenced their anatomical researches upon the living subject! The first experiments of this kind, were witnessed not only by the medical faculty, but by the Alexandrian Court and the Emperor himself. The operation consisted in cutting off an arm and from the circumstance that death did not immediately ensue, the operators and the whole court, fled from the scene, with the utmost fright and consternation, supposing the subject to be immortal! It was therefore ascertained from the investigations made by the school of Herophilus that the removal of a tooth, or even all of them at a single sitting would not prove fatal. *H. B.*

tions necessary to preserve them, and Archigeny it is said,.was the first who recommended a small trepan to be applied in cases of violent tooth ache : it is therefore, probable that dentistry occupied the attention of scientific men at this period.

Aretee gives a specimen of his knowledge of the structure of the teeth, and concludes by asserting, that, " God alone knew the cause of tooth ache."

Pliny, has not progressed on the anatomy and structure of the teeth, any further than Aristotle. He has preserved the same errors, and relates many, more or less absurd stories respecting the teeth. He says, as an example of his fallacious theories, that the teeth of man contain a malignant virus, and that their bite might kill weak animals. He says also, that if two canine or eye teeth appear on the right side of the upper jaw, it is a presage of success and fortune. He relates a circumstance that occurred among the soldiers of the army of Germanicus Cæsar, during their campaign in Germany, which was, that the soldiers were in the habit of drinking sweet water from a certain fountain, and after following this practice for two years their teeth became loose and fell out. He cites a great many instances of the irregularity in the forms and structure of teeth, and quotes the story in reference to the teeth of Hercules, who it was said, had three sets of teeth; and likewise the fable of the sons of Prusias, (Curius and Papyrius,) who were born with teeth, and who were therefore, surnamed *dentati;* he speaks also of teeth developed in the palate, &c.

Aristotle says that all ruminating animals who have no projecting teeth in the front of their upper jaw, designed either for the purposes of attack or defence are supplied *by way of compensation*, with horns.

DOINGS OF DENTISTS' CONVENTION.

It being the opinion of the Dental Association of Western New-York, (auxilliary to the Society of Surgeon Dentists of the City of New-York) that the American Journal of Dental Science is highly calculated to exalt the character and standing of the profession in the United States :—

Therefore, *resolved*, That we, as a Society, and as individuals, will use our utmost endeavours to further the worthy objects contemplated by the enterprising editors and projectors of said Journal, by procuring subscriptions, and by contributing, as may be in our power, to its pages.

Horatio N. Fenn, M D., *Rochester*,
S. Bliss, M. D., *Syracuse.*
G. A. Foster, *Utica.*
R. Griswold, *Bainbridge.*
Drs. Hayes & Harvey, *Buffalo.*
Dr. U. H. Dunning, *Buffalo.*
E. Carr, M. D., *Canandaigua.*
Dr. D. O. Crane, *Geneva.*
Dr. Alpheus Matson, *Auburn.*
A. W. Lathrop, M. D. *Auburn.*
Dr. Blakely, *Utica.*

Baltimore, June 12th, 1839.

Drs. Harris & Parmly,

Gentlemen,—

I have the pleasure of acknowledging the receipt of the first number of "The American Journal of Dental Science," the appearance of which I hail as the harbinger of a more auspicious condition of our art. The importance of a publication of this kind, not only to our own immediate profession, but also to that of medicine generally, must be apparent to every reflecting mind: it has long been needed, and will, I little doubt, receive a cordial and liberal support. That it will be sustained, I fell confident; it would be a reproach to the profession, for whose more especial benefit it is designed, were it not to receive a support sufficient to justify its continuance. For my own part, I am so much pleased with it that I have ordered twenty copies, and would subscribe for more, rather than the publication should cease.

The literature of our art, or at least that which is available to the great body of the profession, is at most meagre; and now that an opportunity is offered whereby every one may furnish himself, and that too at a small price, with all that is valuable of that which now exists, I should suppose that every one having any pretensions to science, would gladly embrace it. In addition to this, the present stock will be continually enriched by new contributions, and thus all will be enabled to keep pace with the improvements that are daily being made in the theory and practice of Dentistry, which of itself, ought to be a sufficient inducement to every one of its practitioners to become a patron of the present publication.

It is unfortunate for our profession that admission to its membership is but too often gained by persons possessing none of the requisite qualifications, and that among this class of practitioners, a disposition is manifested, with a view to conceal their ignorance, to veil the art with as much mystery as possible. But to a proper appreciation of its benefits, a more general and extensive knowledge of its principles is necessary; for the dissemination of which, and for the exposure of the impositions daily practised by such persons, a periodical publication, devoted to the science of dentistry, is eminently calculated.

Among the subjects proposed to be treated in the *Journal*, I observe in the prospectus of the *Publishing Committee*, it is stated that "the arts of quackery will be boldly exposed." This is as it should be. The profession has already suffered too much from the empyricism of artful knavery and the mal-practice of the uninformed. Of the former, the *notorious* Crawcours, who visited the United States three or four years since are a striking example. They, with their "Royal Mineral Succedaneum," taught many of the people in this country a lesson which one would suppose would have guarded them against any future impositions of the kind. But is this the fact; are they any more cautious of those who pursue a similar practice? No. The rooms of those who advertise to plug teeth with a *mineral*, or *metalic cement*, or *paste*, as it is sometimes called, are generally thronged with applicants for the almost magical services of their occupants. No matter how ignorant a man may be of the principles of the art if he only has effrontery enough to come out with a blazing advertisement and propose to restore all kinds of diseased teeth to health and usefulness, however far gone they may be, and to supply the places of lost ones by a species of legerdemain, he is sure to have plenty of business. Were the persons who seek the services of this description of impostors really ignorant of the pernicious effects of their practice, it would not be a matter of much surprise; but that well informed individuals should suffer themselves to be thus easily duped, is indeed truly astonishing.

The plugging of teeth with *metalic cement*, *pastes*, *&c.* or more properly speaking, with *amalgums* of *mercury* and *tin*, *silver* or *zinc*, though the quacks would not dare to proclaim this to the world, as it would then blast their prospects of future success in such infamous CRAWCOURISM, is a species of quackery that ought to be suppressed. Of the pernicious effects of this practice, the public ought to be made acquainted; and I for one would be highly gratified to see some remarks upon the subject by you or some other person capable of doing it justice.

Respectfully,
I have the honor to be, sirs,
Your ob't serv't,
E. NOYES.

REVIEW.

[BY SOLYMAN BROWN, A. M.]

"Observations on the Structure, Physiology, Anatomy and Diseases of the Teeth, in two parts; part first by Harvey Burdell, M. D., Honorary Member of the Philadelphia Medical Society, and member of the Medical Society of the City and County of New-York; part second by John Burdell, Dentist. With drawings and Illustrations. New-York: published by Gould & Newman, 1838; pp. 96."

This partnership volume by the brothers Burdell, is a well written and handsomely printed treatise, adapted to the use of the general reader, for whom it was particularly designed. To the well read dentist, even, it is capable of imparting many useful facts, collected from various sources of the first respectability.

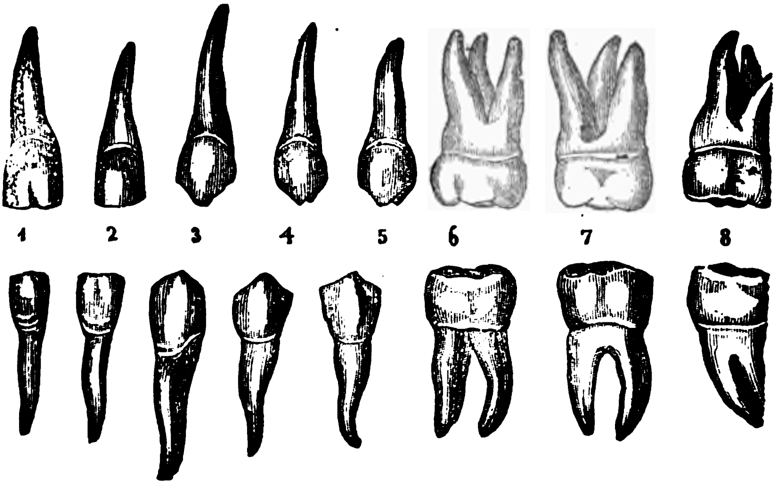
The views of Berzelius, Moriani, Bell, Hunter, Cuvier, De Bloinville, Fox, Meckel, Sabatier, Pliny, Lemaire, Camerarius, Bessot, Good, Mayo, Sir Astley Cooper, Lycurgus, Porphyry, Plutarch, Sir Wm. Temple, Cullen, Lord Bacon, Cheyne, Lambe, and Clark, together with other distinguished authors, are happily introduced for the purpose of illustrating the general doctrines of this work.

One fifth part of the volume is taken up with remarks and authorities on the subject of the *natural food of man*, as it stands connected with diseases of the dental organs; and whichever side of this contested question the reader is inclined to espouse, he will be at least amused by this part of the treatise.

But as Mr. John Burdell has illustrated his portion of the volume with several engravings, the use of which he has politely tendered to the publishers of this Journal, we think we cannot do the profession a more acceptable service in this notice, than by introducing the plates together with the explanations which accompany them.

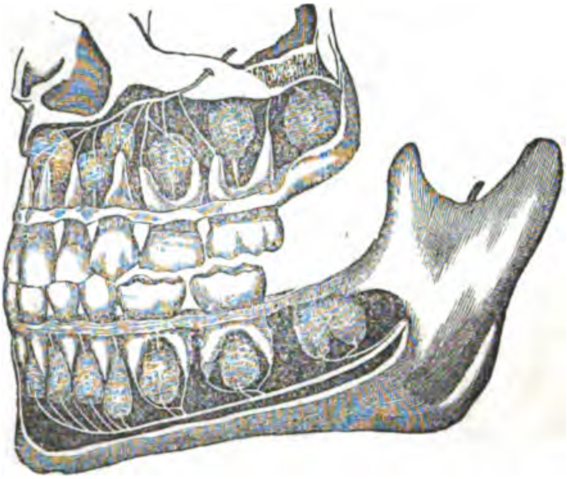
ANATOMY OF THE HUMAN TEETH.

In the jaw of an adult, perfectly developed, the whole number of teeth is thirty-two, sixteen of which are placed in each jaw. These are divided into four classes—the incisors, the cuspids, the bicuspids, and the molares; and last of all, appear what are commonly called the wisdom teeth, but which are of the last mentioned class.



The incisors, or cutting teeth, numbered in the plate, fig. 1—2, occupy the centre of the jaw in front of the mouth. They are thus termed from a Latin word, which means *to incise*, or cut, because they cut the food. Next come the cuspids, fig. 3; these are the longest of all the teeth, and are commonly called the eye teeth; these, with the bicuspids, fig. 4—5, which stand next to them, form a regular gradation between the incisor and molar teeth. Next are the molares, or grinding teeth, three on each side, above and below, having five prominences with corresponding depressions, perfectly adapted to those opposite them, like mill-stones in miniature, for our convenience in grinding our food.

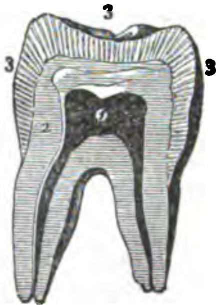
The following drawing shows the upper and under jaws, with the external alveolar processes cut away.



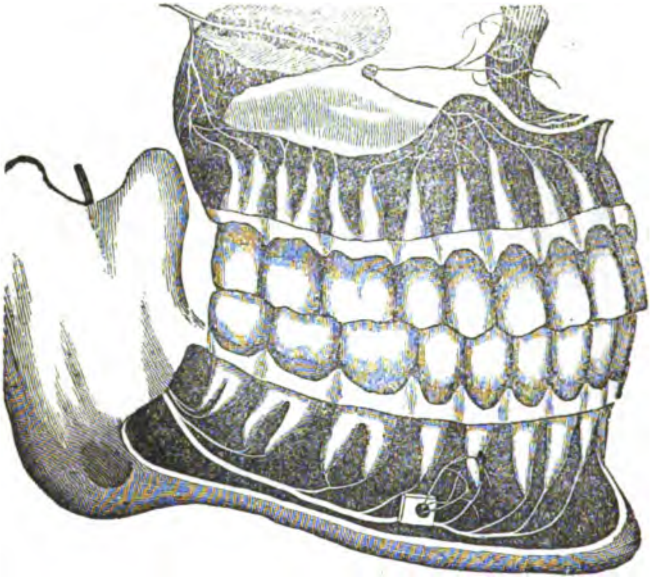
| Drawn by John Burdell, Dentist.

The nerves in the above plate, represented by white or thread-like filaments, which supply the teeth, are important branches of the fifth pair, which has its origin in the brain.

The following drawing (fig. 3,) shows the crystals disposed in radii, springing from the centre of the tooth, so that the extremities of the crystals form the external surface of the tooth, while the internal extremities are in contact with the bony substance, (fig. 2.)



This plate shows a magnified section of a tooth, to illustrate the arrangement of the fibrous crystals composing the enamel. 1. Cavity of the tooth. 2. Bony substance. 3. Enamel, showing the crystals disposed in radii.

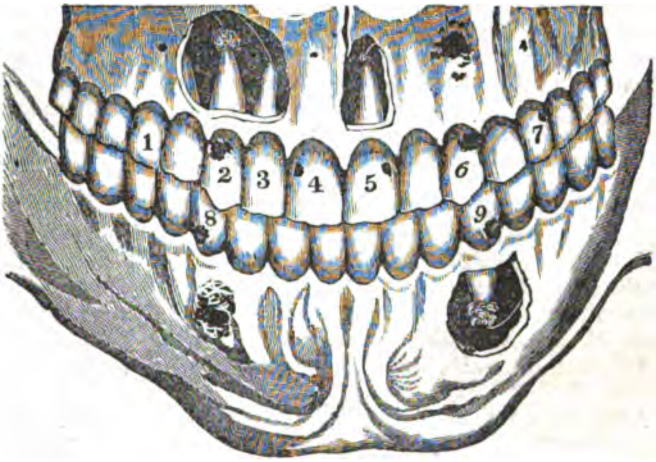


Drawn by John Burdell. Dentist.

The above plate represents a side view of the upper and under jaw, with the external alveolar sockets removed. The front, upper and under tooth, which appears darker than the others, belongs to the other side of the jaws. After the superior Maxillary branch passes through the foramen of the skull, it is subdivided, giving off two twigs to different parts of the face, as well as to each root of the upper jaw teeth. The Maxillary nerve of the lower jaw is subdivided, not only at the place where it enters the inside of the jaw near the ear, but at about half its length, where it is seen passing out of the foramen of the external alveolar plate; these twigs are distributed to the lips and integuments of the lower part of the face.

The permanent teeth are arranged in the following manner: 1st. The two central incisors, or the two most prominent teeth in front of the mouth. 2nd. The two lateral incisors, one on each side of the central, which are smaller and not as wide. 3d. The cuspid, or eye teeth, being pointed, one on each side. 4th. The bicuspids, or small double teeth, two on each side. 5th. The molares, or what are called grinding teeth, two on each side, and much larger and stronger than the others. 6th. The *dentes sapientiæ*, or wisdom teeth, one on each side, and smaller than the molares; these teeth do not appear until about adult age, and are not as dense as the others, and often commence decaying soon after they appear. When the whole set is complete there are as many teeth in the under as the upper jaw, and the above arrangement will apply to either.

The following drawing exhibits the jaws, with several of the teeth in a diseased state, as they are situated in the maxillary bones,—the fleshy covering, or soft parts, being removed to show more accurately the parts affected.

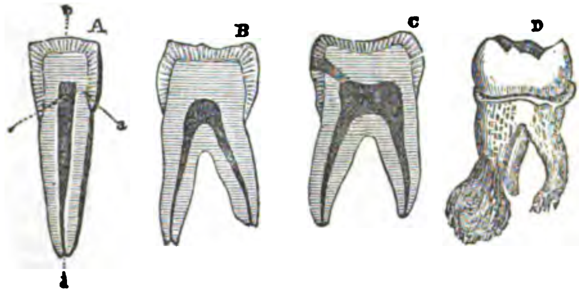


Diseased Teeth.

The teeth numbered in the above plate are all affected with caries, which has penetrated to the nerve, with the exception of fig. 3, which is in a natural and healthy condition. Fig. 1, 4, and 7, show the jaw and teeth in an incipient stage of disease, the ulcer, or abscess having just commenced, and not yet progressed as far as the others.

Fig. 6 and 9 are equally affected at the roots; fig. 6 shows the effect of the ulcer on the jaw after a long continuance of the disease. Fig. 9 shows part of the bone or alveoli removed, to expose the ulcer which has formed at the root. Fig. 8 and 2 are similarly affected. The bone is removed from fig. 5, to show the ulcer when first commencing.

The white lines from the roots of these teeth are twigs or branches of the subdivisions of the fifth pair of nerves, as I have heretofore explained.



In the above plate, A shows a central incisor split through the centre of its body; *a* the bony part; *b* the enamel; *c* the internal nerve; *d* the medium of communication between the nerve of the jaw and of the tooth.

B shows a molar or double tooth of the lower jaw, of an individual aged about 40, split through the centre to show the comparative size of the nerve at this age; and that marked C exhibits a tooth of a person at the age of about 20, to show that this nerve is much larger than in an advanced age, as I have stated in another part of this work; it can likewise be seen that this tooth has commenced decaying at the side, but has not so far advanced but that it could be preserved if carefully and properly plugged. D shows a diseased upper tooth, after the alveolar abscess or sac has formed at the extremity of the root, as I have exhibited in the drawing of diseased teeth.

THE MARYLAND MEDICAL AND SURGICAL JOURNAL.

We have received the prospectus of a periodical to be published quarterly, in Baltimore, by the *Medical and Chirurgical Faculty of Maryland*, under the above title; and to the editorship of which, the following gentlemen were elected by the faculty at its last annual Meeting: G. C. M. Roberts, M. D., Nathaniel Potter, M. D., James H. Miller, M. D. Robert A. Durkee, M. D., J. R. W. Dunbar, M. D., and Samuel George Baker, M. D.

That the work will be conducted with ability, the names of the gentlemen, under whose superintendence it has been placed, are a sufficient guaranty; and from the favorable auspices under which it is thus to be brought out, we doubt not that it will be well sustained. That a publication of this kind is needed in Baltimore, is generally acknowledged.—No city of the same size should be without one, and notwithstanding the many similar ones which we already have in the country, there is room for more. Diseases are constantly changing and assuming different forms, and improvements are daily being made both in medicine and surgery.—With these every practitioner should be made acquainted, and there is no way by which they can be so readily communicated as through the medium of works of this kind. Each number of the "Maryland Medical and Surgical Journal," is to contain at least 128 pages, and is to be published at the low price of $2,50 in advance, or three dollars if deferred. The first number, we understand, is to be brought out sometime during the present month, July. H.

It is a fact perhaps not generally known to the profession, that the father of Francis Joseph Talma, the greatest of French Actors, was a dentist, resident for some years in England. Talma himself followed the profession of his father for eighteen months in Paris, but left it for the stage in 1787. He was highly esteemed both as an actor and a man, by Napoleon.

TO SUBSCRIBERS.—During the present year, the Publishing Committee may perhaps deem it expedient to deviate from the general rule of giving monthly numbers. It has been recommended that the Journal be published quarterly, which suggestion may at some future period be adopted; and for the present it may not always be convenient on account of arduous professional and other duties, to have the numbers ready for delivery exactly on the first of every month; but subscribers may rely on having the full amount of matter promised in the prospectus although more than twelve months may be required to complete the contract.

THE AMERICAN JOURNAL

OF

DENTAL SCIENCE.

VOL. I.—No. III.

OBSERVATIONS

On the qualifications necessary to a Practitioner of Dental Surgery—and on the manner in which they should be obtained.

[BY CHAPIN A. HARRIS, M. D., DENTIST, BALTIMORE.]

Conducive as is the art of the dentist, when judiciously and skilfully exercised, to the comfort and well-being of man, and when injudiciously and unskilfully, often to his great, and sometimes irreparable injury, one would suppose that it would be entrusted to such only, as were qualified to exercise its duties in a proper manner. This however, is not the case. All who are disposed to occupy themselves with it, are permitted to do so, without any reference to competency whatever; and to this, the reproach that has been so often visited upon the profession, is mainly to be attributed.

A thorough knowledge of the science of dentistry, is more difficult to be acquired, than is generally supposed. Many regard it as a mere mechanical occupation, and believe that any one possessed of a slight degree of tact and manual dexterity can practice it. But this is a mistaken view of the subject. Dentistry, as it exists at the present day, is a science, partaking of medicine, surgery, and the manual arts; and he who practices it, should have some knowledge of all these branches, and moreover, be possessed of a mind that naturally inclines him to their study.

So far as the *prosthesis* of the teeth alone, is concerned, a man may be expert and even skilful; he may be able to supply the loss of a single organ, and so on up to an entire *denture*, upon the most correct principles of dental science, and still be unable to exercise all the duties that properly belong to the dentist. In short, he may be a profound mechanician, and thoroughly versed in that branch which relates to *la prothese des organes buccoux*, as the French denominate it, and yet be deficient in many other qualifications that are essential to a skilful practitioner of dental surgery. And equally do the medical and surgical sciences fail to furnish all the information necessary to be possessed upon the subject; and here I would take occasion to remark, that of the graduates in medicine, who have turned their attention to this branch of the healing art, many have shown themselves entirely incompetent to the successful discharge of its duties. In proof of the truth of this assertion, it is only necessary to observe, that men are occasionally to be found, even among the lowest grade of dental practitioners, bearing the dignified title of M. D., and of these, some have had the arrogant audacity to claim, on account of their medical knowledge, a superiority of skill over many of our most distinguished dentists.

That a man, who, after having received a medical education, should adopt, and even descend to charlatanism in the dental profession, as some have done, and thus bring upon both it and themselves obloquy and disgrace, is greatly to be regretted. Charlatanism is bad enough in men, having no such passport to public favor and confidence; but when it is practiced under the sanction of a medical diploma, the enormity of the crime is ten fold greater, and that it has been, and is, even at the present day, many examples might be alleged. We forbear, however, to dwell upon a subject, that must be both painful and humiliating to every honorable, high-minded member of the profession.—Quacks are to be found in all professions,—the medical is far from being exempt from them. Hundreds of examples might be adduced, but we will only mention one, and this was in the person of a foreigner, who, some two or three years ago, visited many of the principal cities and towns in this country, in the character of an Oculist, professing to perform the most wonderful cures. So artfully did he manage, that persons flocked to him from far and near; but his reputation, like that of the CRAWCOURS, of *Royal Mineral Succedaneum notoriety*, was not destined to be of long duration; for the light, of which he deprived his dupes, so opened the eyes of the good people of the United States, that he was soon compelled to seek another field for the practice of his abominable villanies.

So numerous have been the instances of empiricism in medicine, that few countries, at the present day, permit it to be practiced, except by individuals who have been specially educated for the business; nor even then, unless they shall have evidenced that they were qualified to a board appointed for the purpose of examining and licensing candidates for this most responsible and highly honorable calling. People generally, seem to require this, and are unwilling to admit to their confidence, any except those who can exhibit some such evidence of qualification; and well would it be were they equally cautious in reference to the employing of gentlemen of the dental prefession.

But to return from this digression.—Although in a dental education, the general principles of medicine and surgery, should be incorporated, it by no means follows, that in order to be a skilful practitioner of dentistry, it is requisite to graduate in these sciences. The annals of dentistry furnish numerous proofs to the contrary. What names, I would ask, ever stood higher in the profession than Hudson, Gardette, Hayden, Greenwood, Parmly, Baker, Newton, Koecker, Harrington, Waite and Cartwright ?* These gentlemen have long been identified with the profession, Dr. Hayden for upwards of forty years, and have enjoyed an almost unexampled reputation for skill and professional acumen. We might mention the names of many others, who, if they have not been as long known in the profession, have acquired for themselves, a reputation that will vie with that of the most distinguished practitioners; and who, if I am correctly informed, were never able to boast of a Medical Diploma. And I might again ask, who has contributed more to raise the profession from a mere mechanical art, to the dignity of a science, and to respectability, than the gentlemen, whose names I have just mentioned ? I answer—none. Then let no arrogant upstart, whose only pretension to a knowledge of dental science, is, a Medical Diploma; say, that none except graduates in medicine are competent to discharge the du-

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NOTE. I take the liberty of adding to this catalogue the name of C. S. BREWSTER, who is extensively known on the continent of Europe, as the *American Dentist* in Paris. Mr. Brewster has been in the French Capital about six years, and has effected a complete revolution in the modes of practice in that city, having placed himself decidedly at the head of his profession in continental Europe, and secured the confidence and patronage of the royal family of France, and of more of the nobility, as I am credibly informed, than any other man there. All this has been effected within the compass of a few years, by a man who lays no claim to the title of M. D.; and of whom, therefore, it can never be truly said, that a diploma is his only evidence of a liberal education, and of correct professional knowledge.

Mr. Brewster wrote to the author of this note a few days since, acknowledging the receipt of the first number of this Journal, the objects of which he commends in the highest terms of praise, and, in the most friendly manner, proffers his hearty co-operation in its support.

How unlike this gentlemanly conduct in relation to our unremunerated efforts to disseminate useful information to the profession, was the language and deportment of Doct. J. W. Crane, an M. D. Dentist of this city, who stated to the agent when he called on the members of the profession for the purpose of obtaining subscriptions, as the agent informed us, that he should not subscribe for the Journal of Dental Science, because no one of the individuals in New-York, who have the superintendence of its publication, is an M. D., adding, that no one who had not received a Medical Diploma, could be a Dentist.

I would respectfully request some of our mathematical friends to solve the following equation in what was denominated, in my school-boy days, the golden rule of Three :—If one such man as the former *without the title of M. D.*, has, by his talents, knowledge and liberal views, been able to instruct the Dentists, and to elevate the character of the Dental profession in one of the greatest Kingdoms of Europe, how many such men as the latter, *with the title*, would be required to instruct the Dentists, and give dignity to the same profession in a single city of America ?

I feel happy in saying that all of the first Dentists in our country, from whom we have been able to get returns, as well those who have been educated to the medical profession, as those who have not, (and we have many of both descriptions who would do honor to any profession,) have been friendly to our efforts, and have liberally subscribed in order to aid us in our enterprize, undertaken not only for the good of our own profession, but for the benefit of the public at large.

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ties of the art. There are many dental practitioners, who, although they are not graduates in medicine, are much better read, in many, if not all of its branches, than many who have graduated in them.

Having previously enumerated the branches of knowledge that should be understood by a dental practitioner, nothing which has been here said can be understood as opposing the claims of medical gentlemen, to skill in this particular department of the healing art, on the contrary, I would advise all intending to embrace it, to make themselves thoroughly acquainted with the pathology of disease generally, with therapeutics, and with anatomy, physiology and surgery; and if possible, with all the branches of medical and surgical science.—My remarks are intended to apply only to a few, who, presuming on their Medical Diplomas as furnishing all the information necessary to be possessed on the subject, scruple not to detract from the well-earned reputation of those who are unable to boast of such honor. Whenever, therefore, I hear a person say, that none except graduates in medicine are competent to discharge the duties of a practitioner of dental surgery, I at once take it for granted, that he himself, is either ignorant of the profession, or wilfully intends to deceive, and in which case, I can regard him in no other light, than as an impostor and empiric.

The studentship in dentistry, that is usually required, is too short for the obtaining of any thing more than a very superficial idea of a few of its general principles. I have heard of individuals commencing its practice in four, five or six, and in some instances, in one week after commencing its study, and that too, without reading a single book upon the subject, or so much as even touching an instrument. In fact, many commence its practice without any instruction at all. I have often heard of persons employed in the laboratories of dentists, where they have no opportunity of acquiring any information on the subject, except what relates merely to the preparation of artificial teeth, setting themselves up as practitioners of the art in all its various branches. An instance of this kind, came under my own personal observation some two or three years since. It was the person of a young man—a jeweller, whom I had had in my employ for a few months for the purpose above mentioned. As soon as he had become tolerably expert in the soldering and finishing of artificial teeth, he imagined himself sufficiently informed on every subject pertaining to the practice, to engage in it himself. He accordingly left me, and went to the south, where he advertised himself as a dentist. Some have engaged in its practice without any other information than that which they acquire from the manufacture of dental instruments.

But it is not to be supposed, from what I have here said, that I regard any previous occupation, as disqualifying a person for the profession; so far from that, I do not hesitate to say, that I have known individuals, from the avocations just referred to, to rise to the highest point of excellence in it. What I mean to say is, that no man is competent to practice dental surgery, without first being properly instructed in it. As well might a man attempt the practice of law, or medicine without any preparatory study, as that of dentistry; and the time required for the acquisition of a knowledge of either of the former, is not, perhaps more than is necessary for a thorough instruction in the latter.

How then can we expect a person, ignorant alike of theory and practice, to exercise the duties of a profession, requiring qualifications of the most peculiar kind,—qualifications which can only be attained by a pupilage of from eighteen months to three years, under an individual thoroughly versed in all its branches ? And, while this is permitted, is it to be wondered that there should be empirics in it, or that it should be exposed to reproach ? Strange indeed, would it be, for a person to possess himself of a knowledge of it, without study or instruction, and practice it with judgment and skill; and still more strange would it be, were those, who suffer from its abuses, to possess an unimpaired confidence in its utility. To suppose the first, is worse than absurd; and the last, implies a credulity greater than the history of the past authorizes us to believe.

As long, therefore, as dental surgery is permitted to be practiced without any regard to the qualifications of its practitioners, we need not expect a general confidence in its utility; much less, a proper respect for those engaged in the exercise of its duties. That it has attained the respectability and character for usefulness which it has,—that it has endeared itself to suffering humanity, by the relief which it often affords to the most torturing pain, and the very health it frequently brings to those suffering under languishing disease, is to be attributed to those of its practitioners, who, actuated by a high sense of honor, a noble and praiseworthy ambition for emulation, have devoted themselves to it with the most ardent zeal, and scrupulous integrity—giving up to the increase of the sphere of its usefulness, all their powers and energies of mind, have practiced it only in its greatest perfection. To this class of practitioners—and there is not, perhaps any country in the world which can boast more than this—the meed of too much praise can never be awarded.

Returning however to the point more immediately at issue,—I would remark, that although some contend that a knowledge of none of the branches of medical or surgical science, is essential to a dental practitioner, the better informed of the profession concur in opinion, that in order to the judicious and skilful treatment of many of the diseases that properly belong to this department of the healing art, several of them, at least, should be well understood. Indeed, that a contrary opinion should exist, can only be accounted for, by attributing to those who hold it a most woful ignorance on the subject.

In the treatment of diseases of the mouth, as well as those of other parts of the body, reference should be had to the causes that produce them, and it should be borne in mind, that they are not always idiopathic. They are sometimes symptomatic of some other disease, and when this is the case, require other remedies than local; and, how are they to be prescribed by a person ignorant alike of pathology and therapeutics. The curative indications of the same disease often vary, and consequently, can only be correctly followed out by a person acquainted with the several parts of the physical structure—the respective relationships which they bear to each other,—the doctrine of their various morbid conditions and associations, and the *modus operandi* of the remedies that have been furnished us. For example, odontalgia is sometimes the result of gestation; at other times, of a disordered state of the stomach or digestive apparatus; and diseased gums, although principally dependent on local irritation, are frequently favored by a cachectic tendency of the general system. An impaired or vitiated state of the juices of the mouth—a most prolific source of disease, not only to the teeth and gums, but also to the alveolar processes, is often caused by an unhealthy diathesis in some other part of the body. Thus it will be perceived, that in the treatment of many of the maladies of the mouth, constitutional remedies will be required; and although the dentist may say, with other diseases he has nothing to do, it is at least requisite for him to understand them, in order to detect the agency they may have in the production of those, the treatment of which, does properly belong to gentlemen of the dental profession.

Nor is a knowledge of these branches any less necessary to enable the dental practitioner to detect the agency, which a morbid condition of the teeth, gums and alveoli exert in the production of disease in other parts, than for that of those in other parts, in the generating of disease in these; and that they do this, is no longer a matter of conjecture. Instances of the deleterious effects of the diseases of these parts, on the functional operations of other organs, and the system generally, are occurring daily; and Dr. S. Brown, when he says, in Dentologia—

> " So, when disease invades the dental arch,
> " And strides in anguish on his angry march,
> " His burning touch, like the electric flame,
> " Flashes through every fibre of the frame,"

exaggerates the fact but little, if he does any at all. The real amount of disease that is produced in this way, could it be known, would present a most startling picture; and here permit me to observe, that with how much soever of truth may be charged upon many of the members of our profession a want of sufficient attention to the influences exerted upon the teeth, gums, &c. by the diseases of the general system, many of the medical, are no less remiss in regard to those of the morbid conditions of these parts, upon the functional operations of other parts of the body. By attending to them, the success of the physician would be as much increased, as would that of the dentist by attending to the others.

It is not sufficient that the dentist knows how to extract and to plug a tooth, and even to supply the loss of these organs with artificial ones; he should be acquainted with all of their morbid associations as well as those of their contiguous parts, if he would be as useful as his profession is capable of making him.

The proposition, that anatomy, physiology, pathology and therapeutics are necessary to a thorough education in dentistry, being established, the next point to be considered is, in what way a knowledge of the general principles of surgery is to be beneficial to a practitioner in this particular department of the profession.

In the determining of this question, it may be necessary, in the first place, to define what surgery is. To do this, or to tell wherein it differs from physic, is no easy task, since scarcely any two can be found to agree as to the proper definition. So intimately, and I might say, inseparably are the two connected that it would be difficult to determine the line that separates the one from the other. In fact, the province of the physician and surgeon encroach so much upon each other, that it would be difficult to exercise the duties of one without trespassing upon the other; so that in reality, every physician should be a surgeon, and every surgeon a physician. Surgery is defined by some as that branch of medical science, which has for its object, the cure of disease by the use of instruments, or local applications. This however, is but an imperfect definition of the term; its signification is by far more extensive, for there is a wide difference between a mere operation, and the subsequent treatment of the constitutional symptoms that supervene. Surgery means something more than the amputation of an arm or a leg, the reduction of a fracture or dislocation, the excission of a tumour, the dressing of a sore, or the application of a bandage. It would seem rather to mean that union of medical science which embraces a knowledge of all the parts of the human organization separately and as a whole—the functions of all its organs individually and reciprocally—the character of the effects produced upon it by influences of every description, both local and general—and the manual arts, whereby its various local affections, whether external or internal that arise in consequence of these influences, are cured by the employment of instruments, and such medical treatment, local and general, as may be called for by supervening symptoms. Thus it is seen, that surgery, instead of being altogether a manual occupation, is a *union of three sciences;* namely, that of *anatomy, disease, and so much of mechanics, as, in connexion with these, is necessary for the cure of certain local and constitutional affections of the human organization.*

Although it will be seen from the foregoing explanation, that surgery embraces all the other branches of medical science that have been noticed as being essential to the practitioner, yet as the duties of the physician and surgeon, have, and perhaps, for the greater perfection of their exercise, very properly assumed to a certain extent distinctive characters, it was deemed advisable, in presenting their claims to the attention of the profession, to speak of them separately.

Regarding surgery in the light in which it has here been presented, can any one question the importance of a knowledge of its general principles, to the dental practitioner? That it is important, and highly so too, must, I think, be apparent to every one conversant with the duties that properly devolve on, and which are now confided to those engaged in this branch of the practice. Were the duties of the dentist confined exclusively to the treatment of the diseases of the teeth alone, it might perhaps be dispensed with, or at any rate, would not be so essential; but when it is recollected, that the diseases of these organs, however simple they may seem, abstractly considered, are by the relationships which they have with the organism generally, and to the parts with which they are more immediately connected, often exceedingly complicated; and that it is the province also of the dental practitioner, to take charge of the gums and alveolar processes, and that some of these are by far more complicated and difficult of cure than any that attack the teeth, requiring in their management, both local and constitutional remedies, the importance of surgical knowledge in this department admits not of doubt.

The treatment of most of the diseases of the gums and alveolar processes, and especially those requiring manual operations, was formerly confided to the regular surgeon; but latterly, for the most part, they are entrusted to the dentist, whose better opportunity for studying their peculiarities enables him to manage them, if not with more skill, at least, with greater facility and convenience; and if he would make himself as useful in every department of his vocation as he should be, he should avail himself of all the lights that are to be had on the subject: and from the medical and surgical sciences he will be able to derive many that can be obtained from no other source.

After having informed himself sufficiently on these branches, his attention should next be directed to the special study of the diseases of the teeth, gums, alveolar processes and antrum maxillare. With these, and their treatment, he should make himself thoroughly acquainted. This done, his next care will be, the acquisition of a knowledge of the mechanical parts of the profession, and for which he should serve an apprenticeship under an experienced practitioner, long enough to enable him to execute with skill, all kinds of dental mechanism.

By this, I mean not only the preparation of artificial teeth for insertion, but also for the arranging, antagonizing, and applying of them to the mouth. There are many that can prepare artificial teeth to a model, who know nothing of the manner of arranging, antagonizing and applying them; and if these be not properly attended to, they will be of little, and frequently of no use at all. The skill of the dentist, therefore, is displayed as much and even more, in determining the manner of preparing artificial teeth, than it is in preparing them, for upon the correctness of his judgment in this, their utility will in a great measure depend.

Having thus briefly glanced at the branches of knowledge that should be comprised in the professional education of a dentist, and at some of the consequences that too frequently result from the practice of those who do not sufficiently understand them; it may be well, before proceeding to the enquiry, how the evils of which mention has been here made, are to be remedied, to remark, that however indispensable theoretical information is to skill in dentistry, it is not all that is requisite. To excel in the profession, a man should give to it his whole attention. In fact, this is necessary in any thing, but more especially in this, than almost any other avocation. This is no new doctrine; it obtained at a very remote period, and so fully were the ancient Egyptians impressed with the belief that a man could not be skilled in more than one occupation, that they restricted their physicians to the treatment of a single disease. Every disease, therefore, in those times had its physician, and had he not been compelled by law to follow certain fixed rules, he would doubtless have attained to very great perfection.

But with this part of the subject I have done. Enough has been said to show the importance of a more extensive and thorough education in dentistry, than is possessed by a vast many of its practitioners, and that to a deficiency in this, most of the abuses of the art are to be attributed. Let those who practice dentistry be well educated in it, and my word for it, the profession will escape the reproaches that have been but too frequently heaped upon it, and will rise in respectability to a level with those of the most favored and useful. But how the condition of the profession is to be bettered, is a question perhaps somewhat difficult of solution, since, as Dr. Bell, editor of the "Eclectic Journal of Medicine" in a notice of the "American Journal of Dental Science" very truly remarks, "the calling of a dentist seems to be considered open ground, into which any fellow who has impudence, some steadiness of hand, and a case of instruments, thinks himself free to take up a position."

Of the impositions in dentistry, the profession are fully conscious; hardly a day passes that examples of the most palpable mal-practice do not come to the observation of every practitioner; and with a knowledge of these facts, should we rest satisfied without making an effort to prevent their future occurrence? Do we not owe this to our own reputation, and do we not, more especially, owe it to those from whom we derive our employment? To these questions there can be but one answer,—We do! Then let us bestir ourselves, and unite in the adoption of such measures as shall tend to the accomplishment of an object so much to be desired; and which, should they be successful, will reflect upon us the highest credit.

Were I permitted to propose a plan for the remedying of the evils here complained of, it would be, to petition the legislatures of the states, within which we respectively reside, to pass laws prohibiting the practice except by persons who should be regularly authorized to do so, and the authority to emanate from persons competent to judge of the capabilities that should be possessed by those who exercise the duties of the profession. Were the enlightened of the profession to unite in a measure of this kind, their petitions would be granted without a doubt, for community at large have experienced too much of the bad effects growing out of the ignorance of dental practitioners.

But we should not stop here,—we should furnish the necessary facilities for those who may design practicing the art, to qualify themselves properly for its duties. Dentistry should be as much a subject of public instruction, as medicine or surgery; and to me it has been a matter of much surprise, that the efforts of the better informed of the profession, have not been directed to the establishment of an institution for this purpose. An institution of this kind, would not only redound to the credit of the whole profession, but it would be instrumental of much general good. Its influence could not be otherwise than salutary, as it would have a tendency to drive from the ranks of the profession ignorant pretenders, and substitute in their place, men that would be qualified to practice with credit to themselves and to the benefit of their patients. Men of genius and education would be more frequently induced to enter it, for then none except competent persons would be recognized as its members.

That a college for the education of persons for the profession might be gotten up, and that it would be well sustained, I think is more than probable, for if a school of this kind was in operation, it would be expected of dental practitioners, that they should be educated in it, or at least, those who should subsequently enter the profession.

The same object might be accomplished by the establishing of professorships of dentistry in the Medical Schools. All the branches necessary to a dental education, might be taught; and should the profession not be disposed to establish a school for their own exclusive benefit, it is to be hoped the importance of the subject may be soon so felt, as to induce the medical institutions of the country to take it up, and furnish the necessary facilities for the obtaining of as thorough an education in this, as in their own immediate profession.*

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* The late, much lamented Edward Hudson of Philadelphia, received, some years previous to his death, from the Medical College of that city, the honorary title of Dr. of Medicine; and H. H. Hayden of Baltimore, received in the same way, the same honorable distinction from the College of Maryland, and also from the College of Philadelphia. Similar honors were never awarded to any indi-

REMARKABLE CASE OF ALVEOLAR ABSCESS AND ULCERATION OF THE FANG.

[BY AUGUSTUS WOODRUFF BROWN.]

In the summer of 1838, a lady of Newtown, Long Island, called on me professionally, and showed me an open ulcer directly under the centre of the chin, and at least an inch from its anterior apex. This ulcer had been in a state of discharge for fifteen years excepting that it had been closed three times during that period for about three months at a time.

This ulcer had been pronounced by several physicians, to have no connexion with any of the teeth. In fact all the lady's front lower teeth excepting one, were in a perfectly healthy condition. This one was a central incisor, exactly over the diseased part. Remedies had been applied by many medical practitioners both in town and country to no valuable purpose, until I extracted the diseased incisor, after which, in twelve days the abscess was completely healed, and remains so to the present time.

The tooth when removed was found to be black and necrose in all its bony structure; nothing but the enamel retaining its natural appearance.

The most remarkable feature in this case, was the fact that the *pus* from the ulcerated fang, had penetrated through the alveolus to the inner surface of the maxillary bone exactly behind the symphysis; thence it found its way downwards through the integuments, till it pierced the skin below as already described.

We are happy in being able to inform the profession that I. I. Greenwood, Esq. of this city, has placed in the hands of the Publishing Committee, the Autobiography of his father, with a copperplate likeness, of which we shall avail ourselves in the next number of this Journal.

viduals who more truly deserved them. They were given, not for what titles would enable them to perform for the profession of dentistry, but for what their talents, industry, skill and stern integrity had already done for it.

I most earnestly advise all young gentlemen who are qualifying themselves for our profession, to become thoroughly versed in all those branches of science so ably recommended in the foregoing article. That no dentist can practice successfully in all cases without such knowledge, I readily admit; but I have yet to discover that the granting of a diploma by a chartered medical institution, or the purchasing of one from some of the medical schools, or from individuals for a few dollars, as is frequently the case, will impart this knowledge.

The same discovery remains yet to be made in England, for I have not yet known among all those who have been distinguished there, either as practitioners or writers, one who has thought it worth his while to append to his name the title of M. D., not even the celebrated John Hunter—nor at the present day, the highly distinguished Sir Samuel Cartwright, nor the accurate and profound writer, Thomas Bell. N. Y. ED.

ON THE USE OF THE TURN-KEY.

[BY S. M. SHEPHERD, PETERSBURG, VIRGINIA.]

It is a matter of regret, that there has been, and still is, so much stiffness and selfishness among our profession. It seems that they are almost afraid to talk to each other on the subject of the Dental Art, each one fearing he will impart to the other some information he never *had* before. Or, it may be, that each one fears he will expose his ignorance. In either case the matter is wrong, and ought to be corrected. As all now have an opportunity through this Journal of giving their views, on different points, it is to be hoped that the liberal-minded will not be backward. By way of commencement, I propose to give a few thoughts on the use of the turn-key. It seems from various remarks in the late books and papers on the subject of the extraction of the teeth, that most of the profession have laid aside the key almost entirely. I believe a great deal depends on the skill of the operator in the use of any instrument to make it efficient. He may use forceps until he can overcome most of the common difficulties without the aid of any other instrument. But all unprejudiced men will confess that the objects are to remove a tooth with facility, and at the same time to avoid unnecessary pain. Then I contend that he who has the ability to accomplish this object with the key, ought not to exchange it for any other instrument. For if he chooses any other, he cannot do more than obtain the above named object: and he necessarily inflicts much useless pain in making the change. That the key possesses great power, no one can doubt who has been in the habit of using it: and that many have had the mortification of seeing miserable wounds inflicted on the gums and jaws of their patients is equally true. This no doubt, has caused many feeling men to lay aside that powerful instrument, thinking the injuries were a necessary consequence of the use of it. Any man of proper feeling would, under similar circumstances, come to the same conclusion. But I believe that no avoidable injury is produced by a proper use of the key. If the instrument is improperly proportioned, no man can use it with good effect; but if the proportions are correct, and the operator skilful, I believe it is the most certain, safe, and least liable to produce useless pain of any used, in a large majority of cases. Most of the key instruments that I have seen are defective—the fulcrum being much too long. Most operators try to obviate the difficulty by lengthening the hook to agree with it; but it is a mistake: the fulcrum should be shortened, so that there should be as little spare room in the instrument when it is placed on a tooth, as possible. This will prevent the fulcrum from slipping down too low, in the effort to extract. The following will show the applicability of the key to a tooth. Place the fulcrum exactly on the line where the gum joins the tooth, then pass the hook over to the opposite side, and press the point down as low on the neck as possible. This will bring it below the fulcrum and give it the power to elevate. If the operator can then extract the tooth without allowing the fulcrum to slip down on the gum, the instrument is correct, and will, if skilfully used, always produce a happy effect. I have a large assortment of the various instruments now in use for extracting teeth, and in a large majority of cases I use my key, without any of the mangling effects generally produced by the instrument. It is a fact, that an instrument that cannot be used without bruising the gum and splitting the alveoli, ought not to be used at all; but I think a good turn-key is indispensable in a dentist's case; for there are some instances in which it is better, in my opinion, than any instrument I ever saw. It is to be hoped, therefore, that the key will be improved rather than abandoned.

EFFECT

Of Constitutional Disease on the Health and Structure of the Human Teeth,

[BY JAMES D. M^cCABE, SURGEON DENTIST, OF RICHMOND VA.]

Numerous evidences exist to convince us that the human teeth attracted attention at a very early period of time; as far back as the records of man extend, they are spoken of as essential attributes to a lovely countenance. The ancient poets and inspired writers unite alike to celebrate their utility and beauty, enumerating amongst the charms of female loveliness, the whiteness and regularity of the teeth. But while they speak of their appearance, and evidence their regard for their beauty and regularity, we have no authority for supposing that the diseases which *now* afflict those organs, *then* existed. The world was yet in the morning of its youth, and the grievous ills incident to the violation of natural *organic law*, were but partially developed.

To the observant mind, nothing can be more distinctly obvious, than the prominent truth, that the human constitution, weakened by excess and debauchery, constituted the grand cause of the ills which afflict humanity, and scatter death through the abodes of man, and are more destructive to his happiness, than the clouds of Locusts, to the green and fruitful fields of Egypt. The poet wisely, truly sung,—

> " The first Physicians by debauch were made,
> " Excess begun, and *still* prolongs the trade."

The teeth, like other organized members of the human system, are subject to be affected by the same causes which operate on the human system generally, or locally. In other words, the diseases are mainly produced by departures from natural law; which, affecting the general constitution, involved in their effects all parts of the system, weakening and disordering their functional operations, thereby affecting the formative process; these results are by a law of hereditary transmissions entailed upon our offspring, and thus diseases become general or local, according as our habits tend to their developement in the one form or the other. I am aware that in the remarks I have to offer, I may differ from my professional brethren—this I regret—and as an enquirer after truth, am ready to submit to correction if in error; but under present advices, I feel called on to maintain views founded, not on theories of the study, but upon observations, and in coincidence with philosophical principles. If it be true, as all experience hath shewn, that self indulgence and luxury have ever a tendency to enervate the constitution, and produce disease—and, that as a people indulge in these habits, so in equal ratio, the forms of old diseases are changed in intensity, and new ones introduced; then it must follow, as a necessary consequence, that if the teeth compose *any part* of the system thus affected, they have, and still do participate in all these changes, not only in their general health, but in form and structure. I have been at a loss to understand the object of those, who have spoken of the teeth, as though they were independent members of the human system, separated entirely from all connection with the law of sympathies; frequently inflicting great injury by nervous transmission, yet unaffected in return. These writers have contended that climate and habits could exert no influence over these organs, as long as external agents were excluded from contact with them. These *notions* have been the mischievous cause of the *Quackery* with which the dental profession has been cursed; nor have the medical practitioners of our country been wholy blameless in this matter;—they have taught that "a little mechanical skill in the use of the small tools," was the perfection of dental qualifications, and thus from *Maine* to the Gulph of Mexico, the land has been inundated with ignorant pretenders, until the profession is so much degraded, that in some neighborhoods, a DENTIST *is considered Cousin German to a dealer in wooden nutmegs.* It is perfectly reasonable that thousands should adopt the dental profession, when it was of such easy access as represented. Who could not acquire, in a few weeks, a little manual dexterity in the use of the key or forceps, and learn to fill up a decayed tooth with tin foil, or an amalgam of quicksilver and bismuth? Nothing easier! But this is a flagrant departure from our subject, for which the reader must excuse us. The position is, that diseases of the teeth may be traced to the effects produced by departure from organic law, whereby the original healthy constitution was impaired, and the physical structure subjected to disease;—and, that at this day, they are more or less affected according to the habits and general health of any people.

The earliest allusions made to the teeth, are to be found in the sacred writings; and notwithstanding these allusions are frequently referred to in proof of the antiquity of the dental profession, not a solitary "loop whereon to hang" such a conclusion is furnished by them. That they were admired, and spoken of with sentiments of admiration, is true; but not one word is said of their diseases, which would no doubt have been done, if then, as now, they were extensively diseased. A late writer, to whom the profession is much indebted for a mass of practical information, and deep devotion to its interests, has fallen into this error. He remarks, speaking of the teeth, and sustaining the theory we object to, that, "The Hebrews considered the loss of these organs as a grievous, and somewhat disgraceful circumstance," and in evidence of this, quotes David's prayer against the wicked judges: "Break out their teeth, O God, out of their mouth!" But David prays in another place, that the enemies of God may be "smitten on the cheek bone." Are we then to infer that they were subject to diseases of this class also, and that they considered the loss of the cheek bone "a grievous and somewhat disgraceful circumstance?" The fact is, that any mutilation of "the human form divine," was by them considered "grievous," and "disgraceful," and the quotation no more proves the existence of disease in the one case, than in the other. Disease of any form was so unusual among this people, until they abandoned their frugal and temperate course of life, that they were regarded as special emmissaries of the Most High, sent to punish individual sins; or as a scourge to nations. Indeed, the history of every nation will amply confirm the assertion, that as they continued in habits of simple frugality, they were free from diseases; a departure from these habits generated their production, and thus from the operation of a natural law, "the sins of the fathers have been visited upon the children" from generation to generation. The first historian who gives us any clue to ancient disease, is HERODOTUS; he speaks of the subdivisions of the healing art in Egypt, and enumerates in the list those who attended to the teeth. Egypt was, in civilization and refinement, the oldest country on the face of the globe; the habits of its people were luxurious and enervating; and it is more than probable, that remittant and intermittent fevers prevailed to a considerable extent; the inundations of the Nile would at least present a fruitful cause of production to this disease. The healing art, was of consequence, very early cultivated amongst that people, and as the various branches of practice were given to different persons, what more natural than the treatment of diseased teeth, which according to the foregoing shewing, must have participated in the morbid and acute affections to which the system was subjected, illustrating the operation of that general law of our nature, which sends through the human system the poisonous stream of disease, more or less affecting every part.

Hippocrates subsequently, in his descriptions of the teeth, most evidently shews that he believed the health of these organs dependant on the general health of the system, and that the teeth are so intimately connected by sympathy, with other parts, that the local irritation of dentition, will produce constitutional disease, and *vice versa* constitutional irritation, will produce local diseases of the nerves and membranes of the teeth. It is said that the teeth are at this day generally diseased in the city of Rome. Now there is no clearer evidence of the effects of constitutional disease on the character of the teeth to be found. The ancient city of Rome, and its environs, in the day of its iron power, when its citizens were frugal and temperate, were considered the seat of health; but as it has become enervated by excess, and neglect of good habits, its diseases have multiplied to an alarming degree, until its *Pontine marshes* are said to pour forth their pestiferous malaria of death, for the annual destruction of thousands; hence the increase and existence of dental diseases. A host of testimony of this description could be adduced to shew, that as the habits of any nation have contributed to a vigorous constitution, the teeth have been generally good; and as the habits have been enervating and luxurious, contrary effects have been produced. I wish here to remark that I do not deny the bad effects produced by external agents and merely accidental causes. My attention has been specially directed to this subject by a comparison between the teeth of those living in the high mountainous country of Virginia and North Carolina, and those residing in the lower portions of those States. In the former regions of country, the inhabitants are generally frugal and temperate in their habits, possessed of vigorous constitutions, and breathing an invigorating and salubrious air. Fevers, in their various forms are of rare occurrence, and the teeth well formed and seldom subject to disease, unless produced by external causes. In the latter country, the people are wealthy, luxurious in their habits, hospitable in their disposition. They are surrounded by extensive swamps from which noxious exhalations, and deadly miasmata are continually arising, polluting the atmosphere, and destroying health. The *Dæmon Fever* shakes an autumnal pestilence from his wings, and converts a land resembling the aluvial Delta of the Nile, smiling in the richness of its production, and exuberance of its vegetable life, into an extensive golgotha—a vast charnal-house of death. The difference in the general health, is not greater than the marked distinction which exists, in the diseases and organization of the teeth. Making due allowance for the exceptions which exist to every general rule, I hesitate not to say, that the teeth are as much affected by these circumstances, as any other organ of the general system. I am aware that it may be urged, that the prevalence of fever necessarily requires the extensive exhibition of mercurial medicines, and that the tendency of this remedy is to vitiate the secretions of the salivary ducts, and produce morbid affections of the glands, and that thus the injury is produced. But this is obviously incorrect. In no one instance have I ever seen or heard of the destruction of the *structure of the teeth* from these causes, though the gums and processes have in many instances been entirely removed by excessive salivation, and not unfrequently adhesions formed between the gums and membranes of the cheek. The effect of fever is to debilitate the system generally, and produce a tendency to functional disorder in all the organs. This debility is transmitted from generation to generation, and is seen as fully operating in the parts engaged in the formation of the teeth, as in any parts of the system, as is evidenced in the delicate organization, and speedy decay of these valuable appendages. I have seen infants' first teeth come through the gum much affected with caries, and in one case, a little boy, who cut his first desideous teeth (the two lower central incisors,) when he was seven years old; I called to see him about a week after they were developed, and found them extensively affected with *denuding of the enamel.* It is a most melancholy sight in many of our towns, in the lower part of the states alluded to above, too see almost every child you meet with, from the first appearance of the temporary teeth, to the full developement of the permanent ones, smiling in infantile playfulness as they disclose a mouthful of blackened crowns, and ulcerated gums; like (as a medical friend remarked, when speaking of these things,) " the blackened stumps of a new ground partly grubbed up." And females too, with faces fair as Mohommed's Houries, and charms that would warm an Anchorite's heart, uttering tones like the song of the *Bulbul* from lips lacerated with the spiculated fangs of decayed teeth. Whence these effects, if the diseases of climate exercise no influence over the health of the teeth? If constitutional debilities are not propagated by transmission to our offspring, and these seeds of disease nurtured and strengthened by our habits? In view of these things, I hesitate not to say, that as temperance and frugality prevail, so will humanity be delivered not only from this, but all the multiform inflictions of disease to which "flesh is heir."—It would, I admit, require centuries to eradicate the diseased taint from our systems; yet it would yield to a well ordered constitutional frugality, and the world be delivered from dentists and doctors, who to effect "a consummation so devoutly to be wished," would, I doubt not, gladly contribute their aid. Of one thing we may be assured; the benevolent author of our being did not intend our teeth to be diseased, more than other parts of the system; and we may, I think, rationally conclude, that if the eye, the ear, the bones, &c., participate in the general and local affections of constitutional disorders, it would be excluding the teeth from the laws of the animal economy to deny their participation. Another striking proof of the doctrine of this paper, is found in the history of diseases of the teeth, amongst the blacks of our lower southern country. The general impression is, that their teeth are rarely affected, and upon this hypothesis, has been predicated the doctrine, that hot and cold solids and fluids, were the great exciting causes of *caries* of the teeth; these opinions are erroneous; the same difference will be found to exist with the blacks, that I have spoken of with regard to the whites. The character of their teeth is determined by habits and general health;—the plantation hand who has his four pounds of meat, and half bushel of meal per week, though constantly exposed to the sun, laboring in the field, day by day through the warmest season of the year, is healthy; and strange as it may appear, has less constitutional tendency to fever than the white man; his teeth are good, and it is very seldom the case that it is necessary to extract them. But on the other hand, the house servant who shares in the master's mode of life, and in his degree becomes enervated by the habits of life he there contracts, and the excessive feeding of the white family, is subject to the same diseases with them, and as a consequence suffers from diseased teeth. I have examined the teeth of field hands, aged from 40 to 50, and though imbeded in salivary calculus, they were perfectly sound, not one having been removed. While examinations have proven that in house servants of the same age it is a rare thing to find a molar tooth remaining; of course the relative health is included in the statement.

I have before remarked, that external agents were to be considered accidental causes of diseased teeth; and so perfectly am I convinced of this fact, that I believe a tooth formed under a healthy and vigorous constitutional direction will resist for a *long time*, the action of many of the essential oils. Indeed, I am informed that Professor Dunglison, while filling a chair in the University of Virginia, recommended to his class, *a weak solution of sulphuric acid and water, as a pleasant and safe dentifrice;* his own experience, and practice for years, being the ground of recommendation. While I dissent from the professor's dentifrice, and would condemn in no measured terms the quack nostrums for the teeth, vended in the form of powders and tinctures, I nevertheless believe that we attach too much importance to external agents in our remedial treatment of the teeth. The fact is, that in all countries, where diseases, especially fevers prevail to any extent, the teeth affected by this cause in their formation, have a tendency to disorganization. The action of external agents only gives a speedy developement to this tendency, but does not constitute the primary cause. It is, therefore necessary that the dental practitioner should not only know *how*, but *when*, to perform an operation, also to understand the remedial treatment necessary to render the operation perfect. If the views we have advanced, be correct, it will be found that much of the abuses heaped upon physicians for destroying the teeth, is unmerited, and that the rapid decay of teeth immediately succeeding a protracted spell of sickness, is more the result of disease extending to these organs, than the effect of medicines exhibited during its prevalence. The dentist should always be prepared, when called in to prescribe for the relief of all such cases, to conduct his operations in view of the causes producing the affection, thus mingling a knowledge of human diseases generally, with the manipulations of his art, under the direction of, and in coincidence with, the medical attendant; for in a vast number of cases, the advantages of an operation are destroyed by the circumstances under which it is performed; and though the operator may possess "a little mechanical skill in the use of small tools," he will find that something more is needed in the honest and conscientious practice of the profession he has chosen. I have seen vast benefits resulting to the teeth, from a mild alterative treatment, directed to the removal of morbid diathesis of some important organ; and again, a local treatment of the teeth, entirely removing constitutional disorder. It requires, therefore, some medical acumen to detect the cause of disease, and prevent an attempt to treat the effects alone. I have no doubt the observations of others have suggested similar thoughts; and as the "Journal" promises much to the profession, I have sent you these desultory remarks, more to elicit enquiry than for any other purpose. If they are worthy of a place on a spare page, you can thus appropriate them. (A)

I am so much pleased with the sentiments contained in Mr. Shepherd's article on a preceding page of the present number, that I feel it my duty to say, that notwithstanding forceps have been greatly improved by the efforts of Dr. Flagg, of Boston, and other dentists, distinguished for their skill and ingenuity, and can with the utmost propriety be recommended for general use in the extraction of teeth, yet I have never abandoned the use of the improved key-instrument, and regard it as decidedly the best extracting instrument in my case. In a general way, it can be used in all cases in which the forceps are available; but not always with the same facility or convenience; for there are many cases where the forceps cannot be used successfully without cutting away considerable portions of the socket, and subjecting the patient to much pain and inconvenience during the operation, the whole of which can be avoided by a judicious application of the key; and in all such cases there is no other instrument in use, or that ever has been used to my knowledge, which will answer the same good purpose. From the injuries that are almost daily inflicted by it, and which so frequently come under our observation, I am led to the conclusion that there are but a few of the great mass of "Tooth drawers," and dentists that thoroughly know its use or understand its application. N. Y. ED.

(A) In publishing this communication from the pen of Dr. McCabe, we would not be understood as becoming, in any sense, sponsors for the truth of its doctrines, any more than we do for any other opinions which our correspondents may choose to discuss on the pages of the Journal. We esteem it our duty as Editors and Publishers of a Dental periodical established exclusively for general benefit, to open our columns to free discussion, and on these principles we give place to Dr. McCabe's article with great pleasure.

HISTORICAL SKETCH

Of the progress of Dental Science,—Translated from the French, with notes and general observations,

[BY HARVEY BURDELL, M. D.]

Author of "Observations on the Anatomy, Structure, Physiology, and Diseases of the Teeth."—*(Continued.)*

Third Period.

From Galen to Versalia.

Galen,[*] availing himself of the anatomical knowledge of his predecessors, but more particularly of the Alexandrians, was enabled to describe the teeth with greater advantage, and with more exactness than had been done previous to his time. He says the teeth are all formed during gestation; that the molares of the upper jaw have three roots, and those of the lower only two; that the canines are termed eye teeth, οφθαλμιχοι because they receive branches from the same nerve that extends to the eye. He was of the opinion that the teeth were REAL BONES: in ossium numero dentes habendi sunt, etsi secus nonnulli sophistæ arbitrentur. ***

Albucassis, was the first who asserted that the teeth could be transplanted,[†] or taken from the jaws of one person and placed into those of another, and yet maintain their living principle. I will, however, notwithstanding the momentary digression, mention a case related by Ambrosie Paré. We will allow him to relate the circumstance himself: "A princess was obliged to have a diseased tooth extracted, and on applying to a surgeon, she brought with her one of her waiting maids, who stood by the side of her mistress, and when the tooth of the princess had been extracted, a sound one also was taken from the jaw of the girl and placed into the socket of the jaw of the former, which took root and became sound and healthy."***

Fourth Period.

From Versalia to Harvey.

Versalia succeeded in reclaiming the science of anatomy from the degraded condition into which it had fallen. He, however, appears to have neglected the study of the anatomy and physiology of the teeth, and therefore has left no writings on the subject worthy of note. He says, however, that the teeth are similar to other bones, but that they differ from them because they are exposed to the action of the atmosphere ; and he also believed that the temporary or infant teeth assist in the formation of the second set.

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[*] Galen commenced the practice of his profession at Rome about the year 160, and on account of the success he met with in practice, his opponents declared that he was leagued with a super-human power, and thus "traduced him as a magician." He wrote more than 700 essays on different subjects, most of which were on medicine and anatomy. He died at the age of 70. H. B.

[†] The doctrine of transplanting teeth, so as to render them as healthy as the orignal ones is an absurd theory, for it is impossible, and contrary to the laws of physical science, to revive a living principle between the nerve of a tooth thus transplanted and the jaw bone, and it is doubted whether a healthy tooth can be extracted and replaced again, into the socket of the jaw of the same person, without destroying its vitality, although the celebrated Hunter was of a different opinion. H. B.

Eustachi has given a much better and a more perfect description of the teeth than had been done by his predecessors.* He describes their anatomical structure, their shape, uses, number, and the diseases to which they are liable, in such a perfect manner as to leave but little unsaid respecting them. His views, however, in reference to their attachment to the jaws, may be considered hypothetical. ***** He coincides with some of his predecessors, that the hardness of the teeth of animals is in proportion to their ferocity. He distinguishes the bony portions of the teeth from the enamel, and compares the latter to the bark of trees. In a well written dissertation on the developement of the teeth, he gives a detailed sketch of the dental follicules, of their vessels, &c. The rudiments of both the first and second set, he says, exists in the fœtus. He says, also, that the teeth are supplied with a living principle, but that they are nourished differently from the bones, and he gives as a reason in proof of this position, that the teeth do not unite or become consolidated when broken, as is the case with the bones. He believes the teeth derive their sensibility from the nerves given off from the follicule, and that the tooth-ache arises from a pressure upon these nerves, or that the nerves swell and press against the bony parts of the teeth ; but this, he even admits to be merely a conjecture : *Ego quamquam certam demonstrationem non habeo, conjectura nihilominus adducor, et suspicer nervum, qui in concavitate dentium penetrat, in minutissimos surculos diffusum cum intima ipsorum substantia, quæ mucosa est initio generationis commisceri.*

FIFTH PERIOD.

From Harvey to Bichat.

The study of the anatomy of the teeth during this intervening period, appears to have occupied the attention of professional men. The distinct essays that have appeared on the subject are very numerous, but as the science has gained so little from them,I shall not notice them in detail.

Becker, Schroeder, Bartholine and Genga, have written gross absurdities respecting the teeth. Bartholine mentions a case in which a single tooth occupied the whole circle of the jaw, and Genga relates a case of the growth of an *iron* tooth.

Whilst I am on the subject, I will mention the case of the golden tooth, which in former times produced so much *sensation* throughout the community. Several dental authors believed this absurd story. Ungebaur, however, very justly ridicules those credulous persons, who are ready to believe whatever appears strange, and which they cannot directly comprehend. He, however, admits that many errors have been committed in reference to the composition of the teeth, from the fact, that they *often change their color*, and become yellow, or black, as the case may be, from concretions of foreign matter upon their surfaces. He also says, that the teeth of many ruminating animals take the color of the juice or sap of the plants upon which they may have fed.

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* Eustachi was one of the most celebrated anatomists of the 16th century.—He was the first who gave a correct description of the renal capsules and the thoracic duct, and he also discovered a valve in the heart and an opening between the throat and internal ear. H. B.

Fulchius, in his dissertation, explains the fallacy of the golden tooth.—"Rhumbaumius," says he "saw a child, that it was pretended, had a golden tooth." This child was exhibited for money, as a great curiosity. Rhumbaumius evinced some doubt as to the actual composition of the tooth, and therefore sent a gold-smith and directed him to cut a small portion from it for the purpose of analysis. This was done, and the goldsmith declared the tooth to be real gold. :The next day, however, Rhumbaumius called again to see the child's tooth, and to his surprise, the notch made by the goldsmith had disappeared, which caused him to suspect that fraud had been practiced, and he again examined the tooth with greater care than before, and on passing a stillet between the gum and the tooth, succeeded without much effort, in detaching a plate or cap of gold, which had been closely fitted over the projecting surface of a natural tooth. * * * *

Fredericus wrote a dissertation entitled: "De dentium statu naturali et præter naturali," in which he displayed great erudition. He commences this thesis by giving a detailed sketch of the importance and dignity of the teeth: *dignitas dentium*. In certain parts of India, he says that the teeth were formerly so esteemed, that they were offered as sacrifices to the gods; and the ancients, seeing that the teeth remained perfect after the body had been long entombed, supposed they assisted in the final resurrection.

He compared the phenomena of dentition to the germination of grain, or the sprouting of seeds whilst yet enveloped in their capsules: Totus dens primum inclusus est folliculo seu membrana tenui ac pellucida, non secus ac granum in arista.

We have received several epistolatory communications from Dr. Caldwell of Va. now resident in Philadelphia, in relation to the re-publication of Dr. Flagg's article in the first number of this journal, one of which he desired us to publish in conformity with our custom of receiving articles from contributors. If this communication, which was in the form of a letter to the publishing committee, had contained any of the Doctor's arguments in support of the ridiculous pretension to a new *Ligamentum Dentis* unknown to the knife of any former demonstrator, and to the lancet of any other dentist, we should certainly have published the article with great pleasure; but as it contained nothing but personal vituperation directed towards us individually, we have filed it among the favors of *interesting* correspondents. Should Dr. Caldwell or any other person, furnish a well written article for the pages of this journal on any subject connected with the usefulness of our profession—we shall gladly insert it without delay, in case communications from our subscribers do not claim precedence.

REVIEW.

[BY CHAPIN A. HARRIS, M. D. OF BALTIMORE.]

Dentologia, a poem, on the diseases of the teeth, and their proper remedies, by Solyman Brown, A. M.; with notes, practical, historical, illustrative, and explanatory, by Eleazar Parmly, Dentist.—New-York, Peabody & Co. 1833.

We have seldom enjoyed a richer treat than has been afforded us by the perusal of the above work; and believing that there are many who have not yet seen it, we would not only commend it to the attention of our professional brethren; but also, to the notice of all who feel any interest in the preservation of the teeth. We saw in several Journals of the day, soon after its publication, very flattering notices of it, but not being able to procure a copy at that time, we were deprived of the pleasure which we have more recently enjoyed, of a perusal of its pages. From the extracts which we then saw, we were convinced that it was a work of considerable merit; but had no idea that it contained so great a variety of interesting information on the subject of dentistry. The author not only evinces a thorough and scientific knowledge of all the principles of the art, but also a mind highly cultivated and richly imbued with poetic fancy. He exhibits the science in its most fascinating colors—presenting the dry details of its general principles in the glowing and eloquent language of a rich poetic imagination; and judging of the capabilities of Mr. Brown as a practitioner, from this production, we believe we hazard little in saying that he is destined soon to occupy, if he does not already, a distinguished place in the profession. The ardent love which he has here manifested for it, will not allow him to rest satisfied with any thing short of the highest excellence; and well would it be for those who are so unfortunate as to need its aid, were all who have embraced it, actuated by a similar zeal and the same high-minded and praise-worthy motives. Were this the case, it would have an importance in public estimation, more commensurate with its value, than that usually attached to it.

The art of the Dentist is thus introduced.

"If nature thus, instructive, deigns to trace
The soul in every feature of the face;
If lovely virtue there displays her charm,
And guilty passions ring the loud alarm;
Arouse, thou slumbering fair! and learn to see
That heaven commits thy destiny to thee.
Is virtuous love thy aim? deserve the prize:
Or friendship? Know that here the secret lies:—
To be—and to appear what men approve:
Their friendship thus is won—and thus their love.
Be mine the pride in measured verse to raise
A plain, but lasting monument of praise,
To that distinguished science, known of yore,
Designed departed beauty to restore.—
The Dental Art, by Greece and Rome admired,
When women to imperial thrones aspired;—

Those mighty states were both to ruin hurled,
But lo! their art survives to bless the world."

On the difficulties of entering into the details of a science in verse, the author makes the following allusion.

"Full well I know 'tis difficult to chime
The laws of science with the rules of rhyme;
Plain, vulgar prose, my subject seems to claim,
Did not ambition prompt the higher aim,
The nobler pride, by more laborious care,
To speak in numbers that shall please the fair."

Of the abuses of the art, Mr. B. seems fully aware, and judiciously cautions those seeking its aid against ignorant pretenders. He says,

"Beware of those whom science never taught
The hard, but useful drudgery of thought,

* * * *

On just desert, let all success attend,
And patient merit never want a friend."

That it has suffered much from the ignorant and unskilful manner in which its duties have been but too frequently exercised, is a lamentable truth; but we are cheered with the belief, notwithstanding the contrary is often now the fact, that the time is not far distant when more correct notions on the subject will be entertained; and when only such as are qualified to practice it, will be permitted to do so.

The following justly deserved and highly complimentary tribute is addressed to the gentleman to whom this poem was presented, Mr. E. Parmly.

"To thee, companion of my happiest days,
The general voice awards superior praise;
'Twas nobly won, by sacrifice of ease,
'Mid raging tempests and through stormy seas."

First and second dentition form the subject of the second canto, and on the importance of proper attention to the former, we extract the following.

"Be prompt to act:—'tis dangerous to delay,
Since life awaits the issue of a day:—
Reject the gentler means:—employ the best:—
Let unobstructed nature do the rest.
This rule neglected, many a smiling form,
With beauty bright, and life blood glowing warm,
Its parents' pride, a floweret in its bloom,
Descends lamented to an early tomb.

Was this advice more generally attended to, the mortality among infants would be greatly diminished, and the mother would be much less frequently called upon to mourn the early loss of her dearly cherished offspring. The fragile and irritable state of the system at the early age at which this operation of nature is performed, is such as to be easily affected, and there can be but little doubt but that most of the diseases met with in infancy, are attributed to the irritation produced by the cutting of the primative teeth. The great relief often afforded by the lancing of the gums, would, at least, seem to render this opinion highly probable.

On the effects liable to result from inattention to the first and second sets of teeth, he observes;

"Nor less the danger when the first array—
The infant teeth—alternately decay,
Or yield succession to a hardier race
With marked reluctance; for, in either case,
Neglect will bring repentance in its train;
In one deformity;—the other pain,
Or fell disease:—but timely care may still
Avoid the danger, or repair the ill.
If pains ensue, and neighboring parts inflame,
Extraction is the cure; and 'tis the same
If nature's law, obstructed in its course,
Should meet resistance from opposing force:
For this resisting force, howe'er remote,
Meets in the dental art its antidote;
Pain flies its presence; anguish wipes her tear;
To hope's fond vision rain-bow hues appear;
Pale, trembling beauty hushes her alarms,
And beaux, admiring, own her added charms.

Now mark the contrast, in some hideous face,
Robbed by neglect, of symmetry and grace:—
Behold those organs, formed on nature's plan,
To serve important purposes to man;
* * * *
Deranged, displaced, distorted, set awry,
Disgusting objects of deformity."

After adverting to the effects produced upon the countenance, especially that of the female, by an irregularly arranged, and badly formed denture, and to the resources of the dentist, he says;

"Such benefits this useful science lends
To earliest youth;—and yet its aid extends
To following years, assuaging mortal pain,
And oft restoring beauty's flowery reign."

Passing on to the third canto, he commences with an apostrophe to luxury,—speaks of its effects upon the general health of the system, and upon the teeth; also of gangrene and other diseases, and as an example, quotes the fate of Urilla; and concludes with the description of caries, its effects and tooth-ache. The whole of this canto is very interesting, and we regret that we can give but a few short extracts. We commence with two on luxury.

Of all the ills that ante-date the doom
Of erring mortals, and erect the tomb
So near the cradle, shortening to a span
Tho fleeting life of transitory man,
The worst is luxury :—Infrequent flies
The lightning's fatal bolt; the lowering skies
Are seldom darkened by the whirlwind's wrath,
Or loud tornado's devastating path.
Beneath the ocean wave though some expire,
And others by the fierce volcano's fire;
Though savage war can boast his thousands slain,
On tented field, or bosom of the main;
Yet few the victims of these fates malign,
Compared, intemperate luxury! with thine."

After finishing the description of the fate of Urilla, he gives the following caution to others:

"Let every fair one shun Urilla's fate,
And wake to action e'er it be too late;—
Let each successive day unfailing bring
The brush, the dentifrice, and from the spring,
The cleansing flood:—the labour will be small,
And blooming health will soon reward it all.
Or, if her past neglect preclude relief,
By gentle means like these, assuage her grief;
The dental art can remedy the ill,
Restore her hopes, and make her lovely still.
Yet other evils may her care engage,
The offspring of an epicurean age.
Destructive caries comes with secret stealth
T' avenge the violated laws of health:
Dilapidates the teeth by slow decay,
And bears them all successively away.

The treatment of the diseases of the teeth—the supplying their loss with artificial, and an "eulogium on those who labour for the good of mankind," are the subjects treated of in the fourth canto. The author commences by invoking the aid of the dentist's art. He says,

"Auspicious art! before whose magic spell,
Disease and pain shrink shuddering back to hell,
Whose touch, like that misterious gem of old,
That changed all baser metals into gold,
Restores the faded flow'ret to its bloom,
And saves the victim from the threatening tomb:—
Direct my song, and teach me to rehearse
In the smooth numbers of enchanting verse,
Those various stratagems employed by thee,
To soothe the pangs of frail humanity.

The subject chosen by Mr. Brown for his poem is a difficult one, affording, as must be acknowledged, comparatively little scope to the imagination, yet it cannot but be admitted that he has been eminently successful. "DENTOLOGIA" is a rich gem in the literature of Dentistry, and should be possessed by every member of the profession.

THE AMERICAN JOURNAL

OF

DENTAL SCIENCE.

Vol. I.—No. IV.

MEMOIRS

Of the Life of the late Mr. John Greenwood, *Mechanical and Surgeon Dentist, of New-York City: Compiled by*

E. Bryan.

The manuscript autobiography of Mr. John Greenwood, together with the notes of his son, Mr. Isaac J. Greenwood, an eminent Dentist of this city, continuing the memoirs of his father's life up to the period of his demise, having been kindly placed in my hands, at the solicitation of the Publishing Committee of this Journal, I propose to pursue the highly interesting history of the subject of these memoirs, in his own language, where it can be done with propriety, with occasional alterations in the phraseology, and where, from inaccuracy or prolixity of style, this plan shall be found to be impracticable, I shall endeavor to give a faithful abstract of all that is likely to interest, as well the general reader, as the Dental practitioner. That there should be inaccuracies of style, may be readily supposed, and will be as readily excused, when we take into account, that from a very early period of his life, such was the unsettled state of the country, growing out of the troubles existing between the Colonies and the Mother Country, that it was no easy matter to find suitable teachers, even for the most common branches of English education.

His history is, as his son justly terms it, " a plain, unvarnished tale;" but will doubtless furnish ample matter for a narrative of great interest to every American, and to every friend of liberty; and the more so, as the writer was himself an active participater in the many battles which he describes, both by sea and land, during that fearful contest for American Independence, involving the genuine principles of free government, in opposition to the mandates of arbitrary power.

The events related are without dates in the original manuscript, having been written from memory, long after they had transpired.

Mr. **John Greenwood**, late Mechanical and Surgeon Dentist of the city of New-York, whose name will always be memorable among his professional brethren, as having been for many years the Dentist of the great Washington, was born at Boston, Massachusetts, on the 17th of May, 1760.

His father, Isaac Greenwood, was the first practical dentist in Boston, and the only surviving son of the Rev. Isaac Greenwood, Professor of Mathematics and Natural Philosophy in Harvard College, Cambridge, Massachusetts, who emigrated from England, having been previously appointed Chaplain, on board of Admiral Montagu's Flag Ship. He was afterwards called to preside over the congregation of the old North Church, at Boston, where he appears to have been regarded as a preacher of pure christian doctrines, particularly urging upon his hearers the necessity of leading a life in accordance therewith.

The subject of these memoirs was put, to receive his education, in what was then called the North School, in Boston, where, it appears, between three and four hundred boys, the sons as well of the rich as poor, were instructed by two teachers, in merely the common rudiments of an English education, to the exclusion even of English grammar.

At the age of 13, he was taken from school and put apprentice to his uncle, Thales Greenwood, at Portland, Maine, to learn the business of a cabinet maker. Here he remained two years, when, as he says, — "the whole country was in commotion and nothing was talked of but war, liberty or death. People of all descriptions, embodying themselves into military companies, and every one that could be found that had been a soldier, or understood the manual exercise, was employed of evenings in imparting their military knowledge to the recruits. My uncle was a lieutenant of one of the companies, and as I had previously learned to play on the flute as well as on the fife, I was employed as fifer to the company." At this time the news arrived of the attack on Lexington, by the British, when fearing for the safety of his parents, young Greenwood had resolved to elope from his uncle and return to his father, in Boston, for which purpose he selected a Sunday, as the day on which he was least liable to be missed; and having put up a few articles of dress in a handkerchief, and with four and a half pistareens in his pocket, he took an early breakfast, "jumped over the back fence," and was on his way to Boston. "I set out (he says) with a light heart, sometimes running and sometimes walking, and think I must have travelled about forty miles the first day, but without feeling fatigued. I had my fife with me and my sword by my side, and was greatly caressed at the taverns where I stopt on my way, and the towns through which I passed. As the people were mustering and preparing to march towards Boston, I would take out my fife and play them a tune or two, by means of which, I travelled free of expense during the whole journey, which took me four days and a half to accomplish to Charlestown, opposite Boston, where I was detained by the sentry on duty and compelled to go to Cambridge to obtain a pass from General Ward to enable me to cross the ferry, near which, on the Boston side, was my father's residence. I obtained my pass, but still was not permitted to cross the ferry. The British Governor, Gage, gave permission to those who desired it, to leave Boston before the battle of Bunker Hill, and I now saw great crowds crossing the ferry to Charlestown, some with their furniture and some without. Charlestown was generally deserted by its inhabitants; there were, however a few houses occupied, and among them a very large tavern, which I entered, and after some conversation with the inmates they persuaded me to play them three or four tunes on my fife, at which they were very much delighted. Here I met several persons whom I knew, who induced me to go with them to Cambridge to their quarters and there strongly urged me to enlist as fifer, and after turning the matter over in my mind four or five days, during which time, I pleased myself with the idea that I might yet find an opportunity of going to Boston to see my parents; I at length yielded to their solicitation, and enlisted in Captain Bliss's company for eight months at eight dollars a month. This was late in the month of May, 1775. I was the more ready to fall in with their views when I considered my own forlorn condition; I was absent from my relatives and friends and now entirely destitute of money. We took up our quarters at the house of the Episcopal minister, who, with his family had deserted it and gone to Boston; but our quarters were far from being of an enviable description, as the house was entirely destitute of furniture; and I do not recollect that I even had a solitary blanket during our stay at this house. I remember well, that we all lay on the bare floor with our clothes on, and I recollect that I procured a stone, which I placed under my head, as a substitute for a pillow; after remaining here about two weeks, I recollected that I had a great aunt living at Andover, about twenty miles from Cambridge, whom I had a great desire to visit; I therefore procured a furlough from my captain, and entirely without the means of purchasing a meal of victuals; I nevertheless set out with a light heart soon after breakfast and had arrived within a few miles of my destination, it being late in the afternoon, when strange and unaccountable as it may be, it is nevertheless true, something seemed to prevent me from going further forward and appeared to push me back, for when I attempted to go forward I could not; but when I then turned to go back, I could travel with pleasure, very fast and without fatigue; I therefore determined to retrace my steps and travelled most of the way back, until sometime after dark, when being at length much fatigued and very hungry, having eaten nothing since breakfast, I concluded to stop at a farm house to procure something to allay the cravings of hunger and also to obtain lodging for the night. I made a good supper of a bowl of mush and milk, and wrapping myself up in a blanket, lay down on my only bed—the kitchen floor—and was presently in a sound sleep. Before day-light I was up, and without disturbing the family, proceeded on my journey to Cambridge; I had not proceeded far when I heard the firing of cannon, and quickening my pace I arrived there about ten o'clock in the morning, but was then about two miles from Bunker Hill, where the battle was raging. On my way there, I met on the road many waggons and chairs filled with the dead and the dying, and others not so badly wounded, who were enabled to walk by the assistance of others. This sight so entirely new to me, I must acknowledge, alarmed me considerably; and at that moment, I thought I would have given any thing in the world if I had not enlisted for a soldier, but my fears were quickly dispelled by witnessing the fortitude of a poor negro, who I observed had received a wound in the back of his neck, from which the blood flowed copiously. Observing that he appeared to be quite indifferent to his wound, as if free from pain, I asked him if it hurt him much?—he said no! and that as soon as it was dressed he would return to the battle. His courage seemed to have an electric effect on me, for in an instant I felt as brave as himself and never again suffered myself to be influenced by a sense of fear during the continuance of the war. At length I found the company to which I belonged, stationed on the road in sight of the battle, and in possession of two field pieces, which were posted in a position to be advantageously employed to cover a retreat in case of need. Captain Bliss was glad to see me, and complimented me for returning on so urgent an occasion before the expiration of my furlough.

The battle ended that evening by each party keeping possession of their ground. The British having met with such a warm reception, did not appear disposed to advance upon us; however, we deemed it prudent to fortify our position; accordingly we commenced next morning to build a fort on Prospect Hill, which was at the distance of about half cannon shot from their encampment. On perceiving our object, the British also set about building themselves a fort immediately opposite ours.

The night before the battle of Bunker Hill, eight hundred of our men were ordered to throw up a breast-work on Breed's Hill, which is immediately opposite Boston, and adjacent to Charlestown, and gradually slopes to the river.

Our men did not begin to work until near midnight, and then as there were but about three hundred spades and pick axes, not half the men were able to work at a time, this hasty labour effected during the night, must have been exceedingly fatiguing to our men, as those who were obliged to work were of course deprived of their accustomed rest.

This breast-work was open in the rear and commanded the approach from the river. Here all our artillery consisted of t[illegible]eld pieces, each three pounders.

When the battle commenced, it appeared to me like the incessant roll of a hundred drums at once. Many of our men were armed with fowling pieces instead of muskets, and of course were deficient of bayonets; and some had tomahawks instead of swords, for fighting with at close quarters; but to make up in some measure for these disadvantages, they were mostly good marksmen and also took care to load their pieces with five buckshot, besides the usual ball. They reserved their fire until the British came within pistol shot, when our men fired, and every gun brought down two or three, which caused the British troops to fall back; their lines however, were quickly filled up again and again; when they each time renewed the attack, but with a like result. At length the bayonet went to work, and many of our men who had no bayenets, used the but end of their guns, but were at last obliged to retreat, leaving the British in possession of a dear bought little piece of ground.

This hard fought battle lasted over six hours; and to give some idea of the slaughter which took place, my brother who witnessed the whole of the contest from the Boston side of the river, near the ferry, told me that he could distinctly see the British boats landing their wounded on the Boston side, and saw the men bailing out the blood and water, and fresh troops immediately took their place to return to the dreadful onslaught, and as they pushed off, he heard their wives encouraging them to join their comrades. One of the British soldiers, an Irishman, who was in the battle, was afterwards asked by another soldier, not in the battle but in Boston during the engagement, what kind of a fight they had, and what sort of fellows the Yankees were? "Faith," says he, "don't be after bothering me: sure and its myself that can tell ye all about it in a few words,—it was "*diamond cut diamond*," and that's the long and the short of it, my dear honey."

(To be Continued.)

THE ACHING TOOTH,

[BY GILES M^cQUIGGIN.]

Why art thou so rebellious, raging tooth?
Why break the peace that pleasantly prevailed,
And raise such warfare in thy warm abode?
There's room enough for thee, and chance as fair
As any of thy fellows may possess;
And there you all might dwell, a happy band,
In the firm brotherhood that Nature formed,
When she permitted you to take the place
Of that confederacy which she had tried,
And proved too weak to stand the powerful test
Of spreading bone and sinew:—on the soil
Where reigned and ruled the Aborigines
That were your predecessors, you have pow'r
To cluster unmolested; succeeding foes
May never push you from your gifted rights.

You form a compact,—leagued for life and death;
There you should stand in undivided strength,
And hail the friendly visitant that comes
To nourish and sustain you; and repel
With greater energy, the foreign foe
That dares intrude on your domestic peace.

What cause have you for quarrel in your ranks?
What party feuds to rouse you up for fight?
Or why should Cuspidatus ask a right
That to Incisor he'd refuse to grant?
Or why Incisor, seek a place of pow'r
To which his friend Molar might not aspire?
'Tis vain to talk of preference or place,
In a society so firmly bound,

And in such close connexion;—one and all,
Should spurn the nullifier's hated cause,
And stick to *union* to the very last.

And what are names or offices to you?
Or what care you for principle or laws,
Save those which Nature in her wisdom gave
To regulate her household;—they belong
As well to you, as to unnumbered throngs,
That pass through being's changes to decay.

The badge of honor that the Whig may wear,
Or title that the Democrat may boast,
Hath no high preference for you to claim;
You have no principle for which to fight,
As ever changing politicians have,
Who madly sacrifice a thousand times
In saving once, from foul pollution's touch,
The principle they quarrel to sustain.

Your only dread need be the heartless quack,
That like a greedy Vampire, seeks to draw
Blood from your mangled socket, and to thrust
His plundering talons in your owner's purse.
Or it may be, perchance, that he may drive
A plug of composition through your crown,
Or closely pack his tin, deep in your heart;
And for the wretched deed, demand his price,
And nothing less than gold will suit his taste.

Now seeing these are truths, that I have sung,
A few of multitudes that might be told,
Why may you not all live in peace and love,
And help each other in your daily toil?
You'd better do it;—and you aching one,
I warn you once again;—your raging stop,
Or by your hopes of custard, I declare,
That I shall turn against you, and raise up
With all my might, the cry, *expunge! e[illegible]ge!!*

THE LONDON DISSECTOR, OR GUIDE TO ANATOMY,

For the use of Students, &c., revised and corrected by EDWARD J. CHAISTY, M. D., demonstrator of Anatomy in the University of Maryland, 12 mo. p. p. 273. Baltimore, John Murphy, Printer and Publisher. 1839.

The character of the above work, is too well known to the medical public to need any recommendation from us. To the student of medicine, in the prosecution of his anatomical studies, it is of great value. In fact, it, or some similar work could not well be dispensed with; and from the hasty perusal that we have given it, we hesitate not to say, that its value has been greatly enhanced by the revisions and corrections which it has received from Dr. Chaisty. The typographical execution of this work, is neat, as indeed is every thing, that issues from the press of Mr. Murphy.

CARIES OF THE TEETH.

On the pathology of this disease, opposite opinions are entertained. Some contend that it is the result of inflammation of the bony structure of the organs; others, that it is that of the action of external corrosive agents; but the arguments and facts that have been brought forward in support of these respectively, it is not our purpose at this time to notice. Our object at present is merely to invite the attention of the profession to the following extract from a letter addressed, by the late distinguished Doctor Mitchell, to Doctor Hope, Edinburgh, in which the latter theory is, in our opinion, established beyond the power of successful refutation. This communication was made in the year 1796, and that it should so long escape the attention of dental writers, is to us a matter of no small surprise. It was by mere accident, that we, while looking over some old volumes of the New-York Medical Repository, a few weeks ago, came across it.

We extract only that part of the letter which has particular reference to this subject. BALT. ED.

From the New-York Medical Repository, Vol. 2, 1805.

Application of the doctrine of septic fluids, to explain some of the diseases of human teeth and bones: From a letter of Mr. Mitchell, to Thomas Charles Hope, M. D. &c. Adjunct Professor of Chemistry in the University of Edinburgh: dated, Schenectady, Oct. 10, 1796.

It gives me great satisfaction to learn from your letter of September the 5th, dated Edinburgh, "that you very much agree with me in the views I have adopted, respecting the generation of the varions combinations of oxygen and septon;" that you may feel interested in the progress I may make in the inquiry, and have pleasure in collecting and communicating any thing relative to it that may occur. As you suggested, the pamphlet in which the experimets made to destroy contagion in the British and Russian ships, by means of the vapours emitted from salt-petre, had reached me before the receipt of your letter; and had attempted to show in what manner "the facts might be entirely reconciled with the opinion" which, as you politely observe, so many concurrent circumstances have lead me to adopt. I rejoice that these experiments have been made, and by public authority, upon so large a scale. I hope they will be repeated until complete satisfaction shall be obtained of their true nature and value. From summing up the whole evidence in the most impartial manner I am able, I am induced to believe the greatest part of the benefit derived from them arose from a ventilation, purification, removal of nuisances, and the better medical and dietetic management of the sick; and the rest of the good experienced from the *vital air* extracted from the nitre. The *nitrous gas* appears to have been so far from doing any good, that I am confident the result would have been more clear and decisive without it. I should, therefore, propose, as an amendment of the project, to perform all that was performed on those occasions, excepting the septic gas, and improve the respirability of the air in the apartments, by supplies of *oxygenous gas* alone.

Since the date of my last, I have no reason to retract any part of the doctrine then advanced; but on the contrary, there has been such an influx of new matter, that I have found a necessity of enlarging and extending in all directions. For want of something better, I now take the liberty of presenting you with the application of it, to explain some of the morbid changes which the teeth and bones of animals undergo in the progress of life. It seems to me that we are far enough advanced in knowledge, to attempt something like a scientific explanation of some of the alterations which bones suffer by disease; and this explanation will be the more seasonable, as the writers on surgery have scarcely undertaken any thing of the sort. What I have aimed at in this respect, is to connect the facts related by the late Mr. J. Hunter, of London, with those detailed by Mr. Russel, of Edinburgh, by means of certain experiments and observations of my own.

From the known disposition of oxygen to combine with the septon, and form the septic acid, it appeared to me probable, that it would be formed occasionally in the human mouth, from the remains of food adhering to the teeth, sticking between them, and corrupting them. If this was the case, this acid ought to unite with the calcarious earth of the teeth, and form the septite of lime, which might be washed away by the spittle, or, possibly, in some instances, concrete upon the teeth themselves: and, if formed there, the acid might be expected to corrode the enamel, lay bare the bony part and bring on caries; or incrust the inside, irritate the gums and occasion soreness and bleedings.

In order to determine whether these things were so, I procured from a dentist, a quantity of the substance called "the tartar of the teeth," which I supposed might contain some septite of lime; and subjected it to a number of experiments. Having sometime before received complaints from the merchants of Glasgow, of the faulty quality of the pot-ash supplied from the port of New-York; and having been requested by the Chamber of commerce to visit with him, the stores of the inspectors of those articles in the City of New-York, I had collected samples of pot-ash and pearl-ash of the first qualities, with the view of making experiments upon them.

These salts being in their caustic state, had been placed in separate glasses, to attract water and carbonic acid from the atmosphere; and after standing several months, the ferruginous and earthy parts having subsided, beautiful chrystals of the alkali were formed at the bottom of the liquor. A solution of these crystals was made in water that had been boiled some time, to extract its air, and precipitate some of its earth; and to this solution of pot-ash was added a parcel of the yellowish earthy matter, scraped from the teeth, which had been previously reduced to powder in a mortar.

Instantly on mixing them, bubbles of air were set loose and thickly floated on the surface of the mixture; and by their long continuance without bursting, seemed to indicate a sort of tenacity in the fluid, derived from animal mucilage.

The coarser part of the earthy matter, soon sunk to the bottom; but the finer particles took a longer time to settle down; yet in a few minutes, even before the liquor had become clear, a piece of clean paper dipped in the solution, and dried before the fire, deflagrated on being burned, and emitted numerous flashes and sparkles, after the manner of salt-petre, while no such lucid or radiant appearance was evident on setting fire to paper that had been dried after dipping in a solution of the alkali alone. It is not unworthy to remark, that the smell of the mixture was offensive and nauseous, resembling as much as any thing, the nasty odour of ditch and puddle water. On repeating the experiment several times, and in the presence of several persons, the above mentioned appearances were with trifling variations, similar.

The object of inquiry having been less to make an entire analysis of the lapis dentalis, or "tartar of the teeth," than to ascertain whether it contained any *septic* acid, I shall content myself, for the present, with the persuasion that the question is determined in the affirmative, *by the union of the septic acid and of the tartar,* (which would seem to consist partly of the nitrite of lime, combined with animal mucus, &c.) *with the alkali of the mixture into nitre, which deflagrated on being subjected to the operation of fire, with the paper to which it had attached itself.*

In order to apply this principle it must be understood what the component parts of the teeth are. SCHEELE and GALEN seem, as long ago as 1776, to have succeeded in obtaining *phosphoric acid* from the bones of animals, by employing septic (nitrous) acid, while the phosphoric acid was set free. More recently, Bernard (Journal de Physique, Octobre 1781,) obtained phosphoric acid, not only from fossil bones, from those of the whale and sea horse, but from the tooth of the manati, and the grinder of the elephant. It has also been extracted from ivory.

In short, they who have experimentally attended to the subject, have agreed that animal *bones* are chiefly composed of phosphoric acid and calcarious earth, or are phosphates of lime; and that their *teeth* consist in the main of the like materials. Septic acid, therefore, formed in the mouth decompounds teeth upon the same principle that in the eperiments of the Swedish Chemists, it disorganized bone; that is by detaching the phosphoric acid from the lime, and combining itself with that earthy basis. Hunter, (Natural History of Human Teeth, p. 125,) has an idea that the concretions of the teeth resemble the intestinal balls and bezoars found in the bowels of many animals; and this opinion is probably very just; but perhaps less just is his other idea, that these extraneous matters consist merely of earth and the common secreted mucus. (Diseases of the Teeth, p. 66.) He informs us, that he has seen such earthy depositions cover not only the whole tooth, but part of the gums: in this case, there is always an accumulation of a very putrid matter, and frequently a considerable tenderness and ulceration of the gums, &c.

The destruction of the enamel and bony part of the tooth, the rottenness of alveolar processes, the ulceration, absorption and bleeding of the gums, and the fœtid breath, seem to arise occasionally from the same general cause. To understand the reason of these things, it will be necessary to examine what is the order of chemical elective attraction between phosphoric acid, one of the constituent parts of the teeth, and other bones on the one hand; and between lime, the other ingredient, and the substance with which it has a disposition to combine, on the other.—And in doing this, there will be little or no danger of encroaching upon the vital economy or animated structure of these parts, because the enamel has no marks of being vascular,—and having a circulation of fluids.

Natural History, &c. p. 35.) And there are great doubts whether ever the bony parts possess either blood vessels or absorbents. (Ibid. p. 39.)

Phosphoric acid prefers lime to alkalis, and therefore alkalis united with it are immediately rendered turbid by lime-water, and a saline powder, very difficultly soluble in water, is deposited, consisting of lime saturated with phosphoric acid. Alkalis, therefore, whether fixed or volatile, would seem to be incapable of destroying the solid matter of the teeth, whatever their action may be upon the gums. Lime may be disengaged from its connexion with phosphoric acid by the oxalic, sulphuric, septic (nitric) and tartaric acids. Consequently, acid of sugar, spirits of vitriol, aqua fortis, and cream of tartar may decompose teeth by attracting the lime, and disengaging the phosphoric acid. The septic acid, after barytes, pot-ash, and soda has the next strongest attraction for lime; and after this, for magnesia, ammoniac, and clay.

Septic acid, thus, if formed from the remains of animal and vegetable substances, lurking about or among the teeth, in attaching itself to the lime will detach the acid of phosphorus.

This, added to the matters already emitting their scents, will have a tendency to increase the offensiveness of the breath.

Whatever contributes to the accumulation of the matters from which septic acid is produced, may be expected to injure the teeth. Hence lying-in women, and persons suffering long fits of sickness, are particularly exposed to the causes which destroy them; and this the more rapidly, because in such situations, it often happens that little or no assistance is afforded by art in removing those things, which by their presence and accumulation occasion the mischief. When formed in the mouth, it may mingle likewise with the spittle and vitiate the *gustatory powers of the tongue and palate,* and when swallowed, may impede the healthy *functions of the stomach.* Hence may be explained one species of anorexia, especially that mentioned by Darwin, (2 Zoonomia, class 11, ord. 2, gen. 2, spr. 1,) where want of appetite is sometimes produced by the putrid matter from many decaying teeth being perpetually mixed with the saliva, and thence affecting the organ of taste, and greatly injuring the digestion.

The formation of such a substance in the mouth, enters deeply into the explanation of the symptoms of fevers, particularly the condition of the teeth, gums, tongue and throat; with vitiated taste, thirst, apthæ, color of the tongue, &c.

If an incrustation, containing septic matter is thus formed, and is a calcareous composition, of a kind different from the teeth, it is possible to remove it by chemical agents, which have not the power of decomposing the teeth. For as barytes, pot-ash, and soda, can take the *septic acid* away from the lime, either of these substances may be serviceable in removing the concretion, and at the same time not endangering the teeth, whose phosphoric acid having a greater attraction for lime than for alkalis, is incapable of being displaced by them. Alkaline dentrifices would therefore appear capable of removing the calcareo-septic incrustations from the teeth, but incapable of corroding the teeth themselves. Deboye observes, that tobacco ashes (Le Pratique de Medicine, de La Riviere, &c. lib. vi. ch. 2,) possesses a surprising (tres-merveilleuse,) power to cleanse and whiten the teeth. The active ingredient must be the pot-ash. The practice of some ladies of New-York confirms this.

As the septite of lime is very deliquescent, there is perhaps, only a moderate portion of the septic acid contained in the strong tartar of the teeth. There is another form in which it is peculiarly destructive. Dentists distinguish tartar into three species, the *yellow*, the *black* and the *green*. Of these, the last is observed to be, by a great difference, the most pernicious. It never forms a crust or petrifaction, but always appears like a *green stain*. The enamel of the teeth beneath it is generally corroded and almost always eaten through or destroyed. This is doubtless, owing to the *septic acid* formed under the edge of the gum, or between the teeth, from the remains of food containing septon, which aided by the heat and moisture of the mouth, affords that poisonous and destructive fluid, by uniting with oxygen. I have no hesitation to believe, that a small portion of this acid, formed thus in the mouth, and adhering to a sound tooth, is the cause of that violent and sometimes fatal disease consequent upon transplanting these bony substances into the bleeding jaws of another person. The cases are seldom or never venereal.

But the septic acid, formed in these instances, by corruption on the surface of a tooth, poisons the patient or the dentist, when inserted into the fresh socket, in the same manner that it poisons dissectors, when their wounded fingers receive it from the surface of a putrifying muscle. The safe method of preparing teeth for transplanting, is to wash them repeatedly before extraction, with a weak solution of carbonate of pot-ash, in water to remove the septic acid and other foul matters. This is doubtless, preferable to washing the tooth in alkaline ley after it has been drawn, as thereby its capability to grow fast would be endangered.

The septic acid being thus capable of corroding the teeth and alveolar processes of the jaws, who shall affirm that its operation stops there ? Is it not taken in with our air, food and drink ? Are there not instances of nodes and excresences of bones, that are not wholly unlike the incrustations of the teeth ? And are there not likewise instances of caries of the osseous parts, which have a near similitude to the rottenness of the instrument employed in chewing our food ?

* * * * * * * * *

But this opinion is countenanced by better evidence than the poets. For in addition to the diseases of the teeth and their sockets from septic acid produced in the mouth, as already stated, and partly upon the interpretation of the facts of Mr. Hunter, it would be very easy to quote many authorities in the books. Instead, however, of displaying much reading I shall content myself with referring to the authority of an intelligent and skilful surgeon, Mr. Russel, who published, in 1794, a practical essay on that disease of the bones, which is termed necrosis, wherein a bone or part of a bone dies, and a new one is reproduced to supply its place or serve as a substitute. The lower jaw bone is frequently disordered from diseases in the teeth and gums, which, from their situation, naturally determine the complaint to begin at the upper part, and to proceed downwards, (p. 80,)—and necrosis of the lower jaw may be traced to the effects of blows and of tooth ache, especially if a violent attack of inflammation has been excited by the application of any acrid substance to a carious tooth, &c. (p. 98,—and seldom happens to persons under thirty years of age, (p. 93.)

It would seem, therefore, that the reasoning would be fair and safe to consider this caries of the maxillary bone as of a nature quite similar to the decomposition of the teeth and disordered condition of their sockets, which has been shown to be connected with the formation of septic acid in the mouth, and its corroding effects there.

The fœtor of the breath has an analogy, in such cases, with the offensiveness of matter discharged from diseased bones, which in general is discolored and not thick, owing to a separation of the phosphoric acid of the bone from its calcareous base, which is now combined with septic acid, and running away with the other fluids, in the form of a thin and sanious discharge; or occasionally bringing on, when absorbed, that form of quotidian intermitting fever, called the hectic, as in other cases of abscess and ulcer.

Russel considers necrosis, whether happening in the tibea, femus, lower jaw, humerus, fibula, radius, or ulva, as the same kind of disease, (p. 86.) If, then this classification of morbid affections is correct and the application of the principle to explain the phenomena is accurate, it will be proved that the same septic poison which destroys the teeth, corrupts the jaw; and from the same cause which disorganizes the jaw proceeds the decay of the rest of the bones; and this same agent, which works the destruction of the rest of the bones, is the irritating matter that kindles up the hectic fever.

I would not wish to be understood as affirming that all caries of the teeth, jaws, and bones, arise from this sole cause. Far from it. The amount of my reasoning is simply this,—that from the most accurate survey I have been able to take of the subject, there does appear to me to be, in some instances, a decomposition of bone by means of septic acid absorbed from without, or formed, by union of septon with oxygen, within the constitution; and when this acid, mingled with other animal fluids, is carried into the blood vessels, and exerts its noxious powers upon the heart, brain and lungs, it may be the cause of febrile inquietude.

How far this principle may extend, if properly applied I know not. I suspect that syphilitic, cancerous, and scrofulous ulcerations will be found to have a near alliance as to their cause, with caries of teeth, and necrosis of bone now under consideration. But time, with further observation and experiment, is necessary to refute or verify this conjecture. Be the result what it may, I think, as the game is started, and the track is fresh and warm, I would betray less than a sportsman's spirits to be discouraged on account of the doublings and windings of the chace, and give out before the object of pursuit is hunted down, or day light let in upon its dark abode.

But I must quit the subject, and prepare to take my departure from this town, in which, notwithstanding the engagement of my mind upon what is here, you observe I can devote a few minutes to a correspondent in Europe.

To have an idea of the state of things at this place, picture in your mind a settlement, the third in size in the state of New-York, situated in a level spot, beside the river Mohawk, and not far above its greatest cataract; fancy to yourself the chief impediments to navigation removed and the river covered with boats, loaded with families migrating westward to the unsettled lands, or with fruits of agricultural industry coming to market; imagine the goers and comers of gay people, and valetudinarians along this thoroughfare, to the acidulous and medicinal springs of Ball's Town, and the employment of the sons of learning lately established here, in attending to such branches of knowledge, as boys, usually, are taught in colleges : but do not imagine these things and others of a beautiful——. Farewell, and remember I expect from you, as one of the friends and companions of my earlier days, all the help you can afford me in this inquiry.

Yours, with esteem,

SAMUEL L. MITCHELL.

To the following communication, we would invite the attention of the profession. The doctrine that a galvanic action is produced by the plugging of teeth with two kinds of metal in the same mouth, is a new one; and if true, should be generally known, as many of our most eminent practitioners are in the habit of occasionally filling the back teeth with tin and the front ones with gold.

Dr. Mackall is a scientific and experienced practitioner, and would not be likely to advocate a theory that was not, at least, seemingly well sustained. The facts which he has adduced in support of this new doctrine, are worthy of notice. As it regards ourselves, we have long been a believer in it. We had a conversation on the subject about six years ago, with the gentleman whom Dr. Mackall names as having first called his attention to it. Subsequent observations have tended to confirm our belief in the doctrine, and we have frequently afforded relief to persons suffering from pain in teeth that had been filled with tin, by removing this metal, and substituting gold in its stead.

One of the communications referred to by Dr. M. as having appeared in one of our city papers was from ourselves, and in that we took occasion to advance the opinion, that the rapid oxydation of the various, "metallic *cements*" and "*pastes*" that are used for filling decayed teeth, was probably attributable to a galvanic action between the metals of which these "*amalgams*" are composed; but whether this be true or not, the fact that they do oxydize, and that too very rapidly, when placed in the mouth, should constitute an insuperable objection to their use. There is one other fact, that is not perhaps generally known to the profession, and which, while upon this subject, we would notice. It is this,—metals, when mixed, have a much greater affinity for oxygen, than when in a separate state. This is the case with even gold and platina, and it is well known, that these metals, when in a separate state, are less susceptible of the action of this agent than any of the others; but so much is their affinity for it increased by being united, that they are readily acted upon by the *septic* (nitrous) acid of the mouth. BALT. ED.

COMMUNICATION,

On the impropriety of plugging teeth with two kinds of metals in the same mouth, by

{ L. MACKALL, M.D. DENTIST, BALTIMORE.]

There have recently appeared in one of our city papers, two communications, in which the opinion has been advanced, that two kinds of metals should never be used in plugging teeth. Every one has heard of the popular experiment, of placing silver on the top and zinc under the tongue, and making the edges touch to produce the peculiar metalic taste, caused by the galvanic action of the metals; but it is not generally known, even among the profession, that a constant galvanic action is kept up in the mouth, when more than one kind of metal is used in filling the teeth.

My attention was called to this subject some years since by my friend, Dr. Fenerden of this city, and from close observation since, as well as by a recollection of the cases that have occurred in my former practice, I am convinced that galvanism is often the cause of very extensive injury to the teeth. My present object is merely to call the attention of the profession to the subject, by reporting a few facts.

There is scarcely a day but every operator who has much practice will observe, that while he is filling a cavity with either gold or any other metal his patient will often complain of much tenderness when the plugger is brought in contact with the plug.—This pain or tenderness is always produced by a galvanic action between the instrument and the metal when any other metal is brought in contact with the plug; for example, a silver tooth pick. Wood, bone, or any other article but metal will not produce the same effect. Again, it will be generally observed, that teeth more frequently decay around the plugs, when two metals are used in the same mouth, than when all the cavities are filled with one kind; causing, I believe, invariably more irritation than other causes.

I very lately had a tooth filled with tin by my preceptor, others having been previously filled with gold. It was very much decayed, and gave me very considerable uneasiness during the operation, and continued to give me constant dull pain until it was removed, after which I could bear cotton to be pressed into the cavity with considerable force without any uneasiness. There was one symptom attending this case which is worthy of observation. There is an hereditary disposition to inflammation of the periosteum lining the fangs and alveolæ of my superior molar teeth on the left side, and while the tin remained in my tooth, (the *dens sapientiæ* of the lower jaw, same side,) there was a constant dull aching sensation in those parts.

The most distinctly marked case of galvanism in the mouth I have ever met with, was in a lady, on whose tooth I recently operated. I had filled several with tin for her, two or three years previous, and upon examination, I found the teeth had again decayed around the plugs, making it necessary to re-fill the cavities. While cleaning one of them out, she complained of much pain, which I attributed to inflammation of the bony structure only. When, however, I commenced re-filling it, the pain became so violent that I could not proceed, and upon trial, I found that by holding the instrument an inch or more from the tooth, I could at pleasure give her a violent galvanic shock. I filed the handle of a tooth brush to a suitable shape and filled the tooth readily without the slightest uneasiness. At the time, and even a week after, when a silver or steel instrument was held the same distance from the tooth, the same effects were produced. I observed that the exhalation of the breath increased the evolution of galvanism. If the patient kept her mouth open wide and held her breath, the instrument might be brought nearly in contact with the plug without producing any effect.—In conclusion, I may add, that these facts show how unscientific and injurious it must be to fill cavities with such "amalgams" and "pastes" as are sometimes strongly recommended by certificates from physicians, published by some dentists in the newspapers.

NOTE.—That the different metals exert and keep up a galvanic nervous influence in a very great number of instances, there can be no doubt; but how far, or to what extent they act upon each other when properly used,causing decay of the teeth or oxidation of the metals, is a question in my mind yet to be settled. Mr. Koecker, I believe, was the first that practiced the covering of the tender bone, or partially exposed nervous texture with lead, and then covering the lead with gold. I have seen teeth treated in this way twelve and fifteen years after the operation, and one tooth that has been filled twenty-one years, as the gentleman informed me last week, when both metals remained unchanged, except the inevitable wearing of the surface of the gold. The same practice was also followed to a great extent, in teeth that were not tender, by Mr. Newton, formerly of this city, some of whose operations in stopping teeth have never been surpassed by any dentist. I have very frequent opportunities of seeing teeth that he filled in this way ten, twelve and fifteen years ago, without being able to discover any other change in the metals than the wearing I have just spoken of. When the operation is perfectly performed, as it uniformly was by the gentlemen I have named, I am of opinion that no such results will follow when used in the same tooth or in several teeth in the same mouth; but where the cavity of the tooth, in the first place is imperfectly prepared—and where the metals are introduced in the awkward and clumsy manner that they are by three fourths of those who undertake to stop teeth, the worst consequences abovenamed will undoubtedly follow. All compound metals are decidedly pernicious; and the use of amalgams, pastes, &c., cannot, as above stated, be too strongly deprecated. In confirmation of the above, I here make a quotation from the work of the highly distinguished and accurate physiologist, Thomas Hare, Esq. F. L. S. F. R. C. S. L., published in 1820.

"Where a faulty tooth in the upper jaw had been stopped from its side with tin foil, the interstice between it and the adjoining tooth being quite inconsiderable, while the upper surface of a tooth not immediately beneath it in the lower jaw was stopped with the same metal, I have known a galvanic shock regularly communicated from one tooth to the other, whenever, by any accidental movement of the mouth, they came within a certain distance of each other, probably about a half an inch."

I understand there are those now in this city, who use the Crawcour Succedaneum and Amalgam of Silver and Mercury, our object being to correct errors in Dental Practice, we hope all such will discontinue its use, in justice both to the profession and the public; and also to save us the painful necessity of exposing their names. N. Y. ED.

From the American Journal of Medical Sciences.—Case of Exostosis of the upper jaw, by

[B. A. RODRIGUES, M. D. OF CHARLESTON.]

On the 14th of August, 1837, Charity, a servant woman of Mrs. Miller, called on me to ascertain whether I could afford her any relief in her wretched condition. She had been laboring under incessant and agonizing pain in the antrum highmorianum of the right side, which she regarded as the consequence of the impaired condition of the teeth. On this supposition, she had several of them extracted, without any appreciable abatement of her sufferings. Yet deluded with the belief that some one of the remaining teeth was the secret agent of all she suffered, she persisted in having more extracted. Still the evil continued, the suffering was unabated, the cause undetected; and to add to the depression of her hopes, and the aggravation of her ills, a purulent discharge oozed from the empty sockets of the affected side. She again had recourse to medical advice, hoping that this new phasis of her malady, might lead to some indication that would relieve her; at least, that it might reveal its hidden sources, its condition, and its prospects of being remediable. And here for the first time, was it suggested that the antrum was in an unsound state.

It was at this moment, under these circumstances, that she applied to me to perform an operation, which her medical adviser declared to be indispensable. At first, I imagined it to be an abscess of the cavity from the pus discharged, from the strange sensations experienced, and from the greater frequency of this disease over others peculiar to this part. I inserted a trochar into the socket of the second molar, and instead of the gush of matter I had expected, the passage of the instrument was intercepted by a hard, dense, impregnable substance. The existence of an exostosis now forced itself on me. To make assurance doubly sure, I had access to several of my medical friends, among whom, was Dr. Geddings. On examination of the part, the consideration of the symptoms, the obstinate nature of the disease, they concurred with me in opinion, that an exostosis was present, and that the sole indication of relief was its extirpation. Accordingly, on the 18th of August, the above gentleman, with several others of the profession was present, when I proceeded to perform the operation. With a common scalpel I dissected away the gum from the canine teeth to the last molar, raised the flap which it made from the alveolar process, and with a trephine opened into the cavity. Success was easier than had been anticipated in consequence of the carious condition of the process which was so general on the affected side as to reach from the second incisor anteriorly to the pterygoid process posteriorly. In the loss of substance, the external parietes of the cavity shared, so that the bony tumour which filled up and occupied it, could be readily reached. The trephine was applied, the cavity enlarged, and the exostosis removed. It measured in circumference three inches, was light, and cancellated on its surface, but dense and resisting in its more internal layers. There was little or no hemorrhage to delay the operation, or any application to arrest it. After removing every spiculum of diseased bone, and cleaning out the cavity, the flap was replaced and to nature was entrusted the cure. Granulations operated up in full luxuriance, and in the short period of four weeks, the woman was in the enjoyment of excellent health. It may be well to remark, that when I saw her for the first time, the only outward symptom that the disease presented that might have determined the diagnosis of exostosis, was the occlusion of the nasal cavity. Respiration through this natural channel was impossible, but such an obstacle, I can readily conceive, may occur from a high and acute inflammation in the living membrane of the part. An incipient abcess is almost invariably announced by such an obstruction, and a preponderance of the affection over the other naturally suggested its existence. Baudernaue and Abernethy have both noticed the presence of exostosis in these cavities, but to my recollection there has been no history of them recorded, where the tumour was so large, where such extensive injury was inflicted on the adjacent parts, and where nature, after the cause of malady had been removed, exerted her recuperative powers so benignly and so quickly. Its early history, its duration, its probable causes, whether local or constitutional, are involved in mystery, the patient calling on me but a short time before the operation, and seeming to know nothing more of it than her sufferings.

The foregoing, is one of the most remarkable and interesting cases of exostosis of the antrum highmorianum on record; and it is to be regretted, that more of the early history of the case than is given in the report, could not be obtained. As it is, we are left altogether to conjecture as to the causes which gave rise to the disease. It is very likely, that, could all the circumstances connected with its whole history have been ascertained, its origin might have been traced to a diseased condition of some one or more of the teeth of the affected side. BLT. ED.

OF THE OSSEOUS UNION OF TEETH,

[BY SOLYMAN BROWN.]

As Mr. Parmly's specimen of this phenomenon, described in a former number, is of the most decisive and convincing character, precluding the possibility of controversy or doubt on the subject in the mind of any person who inspects it; it may be well to bring together two or three authorities on this occasion, which I think will set the question permanently at rest. At any rate, something more demonstrative than mere scepticism on the subject will be hereafter required to justify any writer in asserting, that "there is no other way of accounting for such a doctrine, than by attributing it to a weak credulity, or love of the marvellous, or a desire to impose upon the world."

The following remarks are from the valuable work of Mr. Thomas Bell, lecturer on the anatomy and diseases of the teeth, at Guy's Hospital, London, page 106, of the Philadelphia edition by Carey & Lea, 1830.

"The intimate and inseparable connexion of two teeth, by means of a true bony union of their roots and sides, though not a frequent occurrence, is too well established by facts, to admit of a moment's doubt. I have met with four instances of it in my own practice, in three of which the temporary superior central incisores were the subjects of this connexion. There are also several interesting specimens of it in the collection at

Guy's Hospital, some of which are figured in Mr. Fox's work. There is no reason to suppose that this union ever takes place after the formation of the teeth has been completed, by the deposition of new bone upon the parts in apposition: in some cases, as in the central incisores, it may doubtless be produced by the original union of the two pulps, previous to the production of bone upon their surface; but, in others, where those teeth are found united, the pulps of which were not strictly contemporary with each other—as in the union of a bicuspis with a molaris—the connexion must have been formed during the progress of their ossification.

This deviation from the natural condition of the teeth cannot, unfortunately, be known by any peculiarity in their form or position whilst they exist in the jaw; and it is only by the lamentable result of an attempt to extract a tooth so circumstanced, that it can be ascertained; for it is obvious that such an operation must be attended, either by the removal of both, or by the fracture of one of them. The case, however, is of extremely rare occurrence, and we must attribute most of the instances which are related, either to a want of discrimination on the one hand, or, on the other, to an attempt to excuse an ill-performed operation.*

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* As this bony connexion of two teeth is a purely accidental occurrence, and unconnected with any other circumstance of a practical nature, than that which I have mentioned, I should not have thought it necessary to enter more into the detail of the cases I have enumerated above, or to endeavor farther to establish their truth than by my own assertion of their having occurred, were it not for an extraordinary attempt which has lately been made, to deny the existence of such cases, and to throw more than doubt upon the veracity of Mr. Fox's statements. I allude to the following passage.

"For my own part I must declare, that during *all* my practice for many years, I have never been able to obtain ocular demonstration of such a fact, or to satisfy myself that there ever has been such a case. And this I say, also, of all my professional brethren with whom I have had an opportunity to converse on the subject. I hope, therefore, that my scepticism on this point will not be construed into a want of becoming respect for the authorities from which these cases are derived. There is no other way of accounting for such doctrine, than by attributing it to a weak credulity, or love of the marvellous, *or a desire to impose upon the world.* Let us take into consideration one of these cases. Mr. Joseph Fox mentions an instance of this supposed union in two central incisores of the upper jaw at their contiguous sides."

Then follow some observations on the probabilities of the case, which do not bear upon the point I am now discussing. The author then proceeds:—

"I indeed believe that Mr. Fox *did not himself see the case he thus describes*, else he would assuredly have given a more circumstantial account of it. Such cases furnish a fine apology to ignorant operators, and I have no doubt that the first case of this kind originated in some bungling accident or ingenious deception," &c.—Koecker's Dental Surgery, p. 319.

The character of Mr. Fox happily stands too high in professional estimation, to require any laboured defence on my part; and an attempt to impugn the veracity of a man whose character was almost proverbial for simplicity and truth, can but recoil with redoubled force upon his accuser. I waive the circumstance that this attack is made on one who is no longer living to rebut the charge, for it fortunately happens that some of the identical specimens from which Mr. Fox's descriptions and figures were taken, are, at the present moment, in the museum at Guy's Hospital, and have been constantly exhibited in my lectures on the teeth, in the theatre of that school, for the last ten years. Mr. Fox has figured

To these two conflicting authorities, I shall add a translation from the "SURGEON DENTIST, or Treatise on the teeth," by Pierre Fauchard, published in Paris more than a hundred years ago. Volume 1, page 342, chap. XXVII. "Four observations concerning teeth variously united together."

First observation. Of two carious teeth so united as to constitute but one body; extracted together.

"In 1705 a Franciscan Friar of the city of Lude in Anjou, came to me to have a large molar tooth extracted, which had caused him much pain. I examined his mouth; discovered that the tooth was very much decayed, and that there was no other course fitted to give him relief, but to execute his design. Although I siezed with the instrument which I used on this occasion, only the one tooth which I wished to extract, yet I nevertheless drew two at once. I thought at first that I had committed an egregious error, but I found that the tooth which had followed the first, was decayed as well as the other, and that they both adhered so closely by an union of their roots, that they formed almost one and the same body. The Friar thinking that I was deceived on the subject, had the curiosity to examine and ascertain the truth of the assertion. In order the better to convince ourselves, we took a knife, the blade of which we placed across the two teeth, and struck upon it with a stone. By this method we could not succeed in separating the two teeth, but by breaking them into fragments, which satisfied the recluse that it was impossible to extract the one without the other. The trouble which I took to instruct the Friar in a truth equally instructing to us both, caused us to part good friends.

REFLECTION.—When teeth are united by their roots only, it cannot be known until after they are extracted. It is different when they are united by their crowns. In this latter case, we ought, before we operate, to inform the persons who have such teeth, that one cannot be taken out without

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three of these cases, though the author in question has quoted but one, and that, certainly, the only one which, from its character and appearance *as figured*, could admit of a cavil. I can, however, vouch for the correctness of this as well as of the others, and without hesitation assert that they are true, undeniable instances of the bony union of teeth.

With regard to the assurance, that "in *all* his practice for many years, the author has never been able to meet with ocular demonstration of such a fact," it really amounts to nothing; but when he declares that "all his professional brethren with whom he has had an opportunity to converse on the subject," have been similarly circumstanced in this respect, I feel myself called upon to remind that gentleman of the following facts which, in the course of years, have undoubtedly passed from his memory.

Mr. Koecker will perhaps remember that, on a temporary visit to England, he did me the honor to call on me, with an introductory letter from a gentleman of the highest eminence in the profession; and that, in consequence of that introduction, I had the pleasure of shewing him my collection of preparations, illustrative of the anatomy and diseases of the teeth, at Guy's Hospital, the major part of which had been collected by Mr. Joseph Fox; and that amongst those which then occupied our attention, were the *very specimens* to which I have just alluded. I am quite sure that had Mr. Koecker recollected this circumstance, he would have had the candour to omit the passage which I have quoted; and I trust that my motive in having endeavored to elucidate the question, will be appreciated as originating only in a sense of justice, and an anxious desire to rescue deceased worth and talent from posthumous misrepresentation."

the other. By this means we avoid all discussion; but when we cannot know the secret adhesion until after extraction, we should, as soon as we discover the union, inform the patient, to justify ourselves in his opinion, lest he should impute to our art, or to defect of experience therein, an accident which depended wholly on natural peculiarity in the case itself."

Second Observation.—Of two teeth united together so as to form but a single crown.

"On the 20th of December, 1723, Miss Lemoyne, aged eight years, residing in Paris near Saint *Magloire*, was brought to my rooms much distressed with tooth ache. On examining her mouth, I found that the canine and its neighboring incisor on the right side of the lower jaw, were so closely united that they formed but one body. Between these two teeth there appeared a species of gutter of little depth, along the crown, with a small interval at the extremity. This double tooth was composed of two milk teeth very strongly united. I did not extract them for fear of injuring the germ which lay beneath, and which should naturally produce their successors of the permanent set."

Third Observation.—Somewhat similar to the preceding.

On the 16th of January, 1724, I went to the house of Mr. Auger, a wholesale grocer. I examined the teeth of his daughter, about eight years old, and remarked, that the lateral incisor of the right side of the upper jaw, belonging to the temporary set, was united to the adjoining cuspidatus, which is not a very common occurrence. I pointed it out to the father and mother, to Mr. *Dandreau*, auditor of accounts, and to several other persons present.

REFLECTION.—It is difficult to determine, whether or not the union of teeth, which are found joined together, depends on the blending of the germs. The middle partition of two of the alveoli not being yet formed, these two constitute but one cavity, and consequently a double tooth, or twins, may, in such case, be the result. It is always embarrassing to have such teeth, because if one of them should be injured by any accident, the other is in imminent danger of being also destroyed

Fourth Observation.—Concerning a sound tooth which it had been thought necessary to extract with an adjoining carious tooth, because they were both attached to the intervening paries of the alveolus.

In 1711, a master cordwainer, requested me to extract the first small molar tooth on the right side of the upper jaw. This tooth was carious and occasioned insufferable pain. Although it appeared to me to be a very difficult tooth to extract, I did not let the patient know it—and succeeded in the operation. Fortunately, I discovered, during the operation, that the small molar (bicuspid) started from the alveolus, together with that which I wished to remove. In an instant I withdrew the instrument, judging by this that the middle portion of the alveolus was firmly attached to these teeth, and that this partition was separated from the rest of the alveolus, by the effort which I had been compelled to make. As soon as I discovered this, I re-placed both of the teeth in their cavities, and separated with a file the parts of the alveolus which held them together. By this means I succeeded in removing the carious tooth without difficulty, and its neighbor which had been disturbed was adjusted in its original position. If I had not had recourse to this expedient, I should have made a great breach in the alveolar process as well as the gum; and moreover, I should have removed a good tooth, which could not have failed to follow the bad one.

Reflections.—It happens every day, in taking out teeth, that we meet with difficulties which cannot be foreseen. If there be any method of shunning the accidents which may possibly occur, it must be by operating prudently and without precipitation. It is necessary to be cautious in giving the first motion to a tooth, and to observe carefully the resistance which it makes to the power applied; above all, to be attentive to what passes, in regard to the other teeth.

If the operator discovers that these are shaken, he may infer that they touch, in some point, the tooth to be extracted. If the agitation is very considerable, there is a possibility that the several teeth are united together, either by intervening alveolus, or by some other means. In such a case, it is necessary to proceed as I have described; and when the operator is well informed, circumspect and ingenious, he will not only avoid many accidents, but introduce into his practice, modes of operation from which the public shall derive the greatest advantage."

Thus speaks Fauchard, of operations performed in the early part of the last century, and of cases of unquestionable osseous union; and the fact that the fourth example given by him, proved to be of another character, viz: the adhesion of two adjacent teeth to the intervening plate of the alveolar process, serves rather to corroborate than weaken the testimony of the author. If Fauchard had not thus put us in possession of the fact that he was well acquainted with cases in which apparent and not real union has place, we might possibly surmise that he had mistaken the character of the examples to which he has referred.

To conclude, I may be permitted to remark, that the scepticism of individuals, however wise or learned, in relation to natural phenomena by them unobserved, is of too negative a character to be the test of scientific truth.

Letter from Mr. A. Clark, Pen Yan, Nov. 16th, 1839.

Messrs. Editors,

Having received and examined with some attention, and much pleasure and profit the first three numbers of your Journal, I beg leave to express my entire satisfaction with the general character of the work.

One design of the Journal, as stated by yourselves, and highly recommended by one of your correspondents, is to boldly expose "the arts of quackery." This, together with every honest man, I most cordially approve. But I am not of those who are eager to brand every improvement in dental science, and every departure from the beaten track however useful, with this opprobrious epithet.

The amalgam of mercury, as a filling for carious teeth, is called by one of your correspondents, an "execrable material." It may be so, and those who use it may be guilty of "dishonesty" and quackery. I do not pretend *now* to determine the point; I take the place of an inquirer for truth.

How does it appear that combinations of mercury, when employed as above stated, are necessarily destructive to the teeth? Does the external surface of the filling corrode, vitiate the saliva, and thus act externally on these organs ? Or does the mercury find its way into the stomach, and act through its influence on this organ ? Or does it operate chemically on the surface of the cavity in contact with it ? Or are these absorbents in the living teeth that introduce the mercury into their substance, analagous to its absorption when applied under certain cirmcumstances to the skin ? Does this article, the use of which is so much abused by quacks of one class, and so bitterly denounced by those of another, act upon the teeth, when used in combination as a filling in any or all of these modes ? What, gentlemen, *is* the modus operandi of the thing ? Will you, or some of your correspondents inform us ?

Whatever be the mode of injury, is it always speedily apparent, or is it slow, effecting imperceptibly, at first, its destructive work ? And if the latter, about how long must we wait to have an experiment satisfactory ?

Argument based on indisputable facts is desired; the dictum of no man, though gray in his profession, will be deemed sufficient.

The scepticism on this subject, these queries may seem to imply, may subject their author to the imputation of ignorance. Well, be it so, many a man has died a fool because he would not seek for knowledge, lest he expose his ignorance.

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The Publishing Committee take great pleasure in acknowledging the generous and successful efforts of Mr. M. K. Bridges, Dentist of Brooklyn, Long Island, in behalf of this Journal. Mr. Bridges has obtained the subscription of ten physicians and two other gentlemen in that sister city.

It is to be hoped that this laudable example which indicates the popularity of Mr. Bridges among his medical acquaintances, as well as his zeal for the interests of this journal and for the welfare of our profession, will be generally imitated by our brethren throughout the country, and that they will "go and do likewise." If each of our present patrons would obtain one fourth the number of subscribers which Mr. Bridges has already done, the success of this work would be placed beyond a doubt, and the Dental profession would be able to boast of a permanent magazine devoted to the interchange of useful knowledge.

THE AMERICAN JOURNAL

OF

DENTAL SCIENCE.

VOL. I.—NO. V.

MEMOIRS

OF THE LIFE OF THE LATE MR. JOHN GREENWOOD,

Mechanical and Surgeon Dentist, of New-York City:—Compiled by

E. BRYAN.—(CONTINUED.)

As soon as my father found out that I was among what they called the *Rebels*, he went to Governor Gage and obtained permission for my mother to go to the American camp, in order to procure a substitute for me, and then to return with me to Boston. She arrived at our camp the day before the battle of Bunker Hill, but was unable to accomplish her purpose and not permitted to return to Boston until the expiration of six weeks, when, on the arrival of General Washington, she made personal application to him for permission to return, which was immediately granted, though against the wishes of many of the officers. She was conducted to the British line by one of our sergeants, and upon being carried to the commanding officer of the British Fort, Major Small, he treated her with the greatest politeness, and conducted her himself, to my father's house in Boston.

After the battle of Bunker Hill, nothing material occurred between us and the British, for some time; they would occasionally amuse themselves by throwing their bombs into our fort, but with little or no injury; and we, on the other hand, by firing at their guard-house, over Roxbury neck.

General Washington, having many spies in Boston, was readily informed of all that was passing in that city. It happened, on one occasion, that he was notified of the intention of the British officers to bring out a new dramatic entertainment, to be performed by them on a certain night, at the Theatre, which was entitled "The Blockade of Boston," and intended to ridicule the *Yankees*, as they termed us. When General Putnam heard this, he determined, by way of retaliation, to set fire to the buildings in the vicinity of the British fort, at Bunker Hill, and near the old causeway, belonging to Charlestown Mills. Here were twelve or fourteen houses, occupied by sutlers, mechanics, soldiers' wives and stragglers, belonging to the British army.

Accordingly, General Putnam having procured large quantities of chips, he caused them to be dipped in turpentine and brimstone, and then loading thirty or forty men with these inflammable materials, done up in convenient bundles, he proceeded, at the head of two hundred men, between nine and ten o'clock at night, to march, silently and cautiously, to the site of our intended attack.

Being at this time fife-major, it was optional with me to go or not, as I chose, but being curious to know what was to be done, I determined to accompany them, though my fife was not required upon this occasion, as we had strict orders to proceed without the least noise. We passed over the causeway undiscovered, and were thus enabled to surprise the different sentries—set fire to the houses, and make prisoners of the inmates, before the British could be aware of our presence, which, however, they soon found out by the blaze of their houses, when they commenced firing from their fort; but we were quickly out of their reach, and I did not learn that we lost as much as one man in this affair.

This conflagration caused no small alarm in Boston, where it was distinctly seen, and at the moment when one of the performers at the theatre, was personating a *Yankee* Soldier, dressed as a tailor, with his shears projecting out of his pocket and his measures hanging over his shoulders, when a sergeant ran hastily upon the stage to give the alarm, and exclaimed, at the top of his voice, "to arms! to arms! gentlemen!! the Rebels are upon us!!" but the audience, supposing him to be acting his part in the play, instead of taking the alarm, loudly applauded him for the fidelity of his acting, and it was some time before he could make them believe that the part he *acted* was no mummery; when, however, they understood him, the performance was instantly suspended and they rushed pell-mell out of the house. My father and mother were in the theatre that night and witnessed the whole proceedings.

In the month of April or May, 1776, the British evacuated their fort at Bunker Hill and soon after set sail from Boston for Halifax, Nova-Scotia. About that time, our regiment, consisting of five hundred tolerably well disciplined men, received orders to march to New-York, and thence to Canada. On our arrival in Montreal, we took up our quarters in the large stone Barracks, adjoining the north gate of the city. In a few days many of our men were attacked with the Small Pox, and were removed to the hospital. The main division of our army was encamped at a place called "Three Rivers." One regiment, commanded by Colonel Beetle, was stationed up the St. Lawrence River, at a place called "The Cedars," about thirty-five miles from Montreal; they were about six or seven hundred men strong, entrenched in a small fort, but so completely invested by the enemy that they were unable to obtain any supplies of provisions. In this extremity, Colonel Beetle contrived to send an express to General Arnold, who commanded at Montreal, informing him of his destitute condition, urging an immediate supply of provisions and a re-inforcement of men : but before a re-inforcement could come to his relief, he was compelled to surrender to the mercy of the Indians, who amounted to thirteen hundred warriors, besides a company of Canadian soldiers, and about sixty British troops, with two brass cannons. General Arnold detached two hundred men from our regiment, under command of Major Sherbourn, accompanied by the captain of my company, whose name was Bliss, also by Lieutenant Edward Comstock, and with three waggons loaded with provisions ordered to hasten to the relief of Colonel Beetle. After marching thirty miles to Fort Ann, they had to cross the St. Lawrence, and then travel three or four miles from the opposite shore, before they arrived at " The Cedars." The Indians seeing them approach, suffered them to proceed unmolested, until they arrived within two miles of " The Cedars," when, having secreted themselves along the road they had to pass, in the woods on each side—the Indians suddenly sprung up, and uttering their horrid war-whoop, poured into their ranks a most destructive fire. They bravely fought the Indians for two hours and then being overwhelmed by numbers had no alternative but to surrender themselves prisoners of war to the savages. When Major Sherbourn crossed the river, he left some of his men in charge of the boats, which the Indians perceiving, sent some of their party, by a circuitous route to the spot, in order to destroy the boats and take the men prisoners, which they effectually performed, so as to cut off all chance of escaping out of their merciless hands.

The Indians killed, in this engagement, upwards of sixty of our men and wounded many more,—and in return, many of the Indians bit the dust, and among them, several of their chiefs, which so enraged the Indians that they stripped all the clothes off our men, that were worth taking, and then butchered all our wounded, that they might not impede their travelling. The manner in which they despatched our wounded, was by knocking them on the head with their tomahawks, and then, as is their custom, taking off their scalps, which they carried with them as trophies of war. Amid hideous yells, they drove their prisoners forward to an old stone church, in the vicinity of " The Cedars," which they had converted into a prison, in which they had secured Colonel Beetle and his men, who were in a most distressing condition for want of provisions, and the Indians, being themselves short of supplies, had killed all the cattle they could find for a considerable distance round, excepting a cow which belonged to the Catholic Priest, which they were forbidden to touch. At length, however, they lost all respect for the priest or his cow, and knocking her on the head, they cut off her flesh while yet alive with their scalping knives, without even skinning her, and soon devoured both the flesh and the entrails. So much cruelty, however, did the Indians manifest towards their prisoners, that if it had not been for the British troops, who restrained them, they would have burnt or otherwise have murdered every one of them.

Elated with their success, the Indians now began their march towards Montreal, with the intention of attacking us. They compelled their prisoners to accompany them; but as many of the prisoners were without any clothing, destitute of provisions and suffering from the flux, the fever, and exposure during the night, there were many unable to travel with the rest; these were from time to time tomahawked and scalped.

General Arnold, who had intimation of their approach, mustered all the men that were fit for service, to go out and attack them; but as two thirds of our troops were in the hospital, suffering with the small pox, he was unable, after leaving enough to protect the city, to call out more than five hundred troops. At the head of these men he marched out of the city. I was with the advance guard. We had not proceeded more than two miles before we saw three Indians in the road, coming towards us—the moment they saw us, they gave the war-whoop, threw down their guns and blankets, ran into the woods and disappeared in an instant. Our guide was a deserter from the British, who had belonged, to what is called the "Rangers." Our general ordered him to cross the woods for the purpose of reconnoitering the enemy, and I was instructed to accompany him. He was armed only with a tomahawk—I, with a small fuzee and a sword. Being alone with him in the woods, I began to be apprehensive that he might show me *foul play*, as I never liked the idea of trusting too much to deserters, who, however they may apparently favor your cause, still they have been traitors to *their* country, and *may* prove traitors to you, when a convenient opportunity affords. I, therefore, kept myself on my guard, by walking at a little distance from him, so as to be ready in case he should make an attack, and if he should do so, I thought I should be a pretty good match for him, as my sword was sharp and my gun loaded; however, I had no reason to complain of his behaviour, as the event will show. We proceeded nearly ten miles, without meeting any one; at length we came to a fence, when we perceived a small house at a short distance. He informed me that he was acquainted with the people of the house and wished to go there alone, as my presence would excite suspicion, on account of my uniform, which was a blue coat, turned up with buff and trimmed with silver lace. I told him I saw the propriety of taking every precaution to avoid exciting suspicion and readily agreed to wait by the fence until he returned, which he did in a few minutes, and then desired me to go back with him to the house, which I did. I found the inmates to consist of an aged Canadian woman, about seventy-five, as I should judge—a Canadian man, fifty, and his wife, about thirty, who was a squaw that he had purchased of the Indians. It was now beginning to get dark and we had not been in the house more than fifteen minutes, when we heard the hideous war-whoop of the Indians. We had scarcely time to secrete ourselves under the bed, when the room was filled with Indians, making the most frightful noises and incessant screaming. I now began to feel that my situation was indeed a most perilous one, as, if they had discovered us, instant death would have been our certain lot; but luckily for us, the Indians were in such confusion that they thought more of their own safety, than of searching the house for spies—as we afterwards learned,that by cutting through the woods we had got ahead of them, and that General Arnold had come up with them, and was pursuing them so closely, that they were retreating in the utmost precipitation and disorder. In about an hour, all the Indians had passed by, and we gladly came forth from our hiding place. My companion wishing to disguise himself, exchanged some of his clothing with his Canadian friend, which having put on, he said "we will now follow the Indians and see what they are about:" we did not, however, go on the public road, but took the precaution to cut across the lots, when, after travelling about three miles, we came up with them at Fort Ann, where was a small town or settlement; outside of which, and on the inside of a fence, he desired me to wait his return, as he wished to enter the town, disguised as he was, and observe their movements. The signal he was to give me on his return, was, that without speaking, he would come along, beside the fence, with one hand touching it all the way, until he touched me, and then I might be sure it was him. I should observe, that this fence, like many others in this country, was constructed of logs set upright and driven into the ground close to one another, so that as I was on the inside of this fence, those who passed on the road could not discover me, especially as it was dark; nevertheless, I began to think myself in a very critical situation; what, thought I, will be my lot,if my companion should be detected, or any mishap should prevent his returning. I never could have found my way back, alone, and should have had to remain there till morning when I should, at least, have been taken prisoner. I was within hearing of the ferocious savages; every minute seemed an hour. I heard some of them walking by me in the road, and I began to fancy that they were in search of me. In this situation of anxiety and suspense, I remained for about an hour, when my comrade returned and touched me in the manner agreed upon. It made my heart jump. "Come along," says he, "the Indians are crossing the river as fast as they can, and will be all over before our troops can come up with them; we must go and inform the general." Accordingly, with all haste, we took our route back, over fences and fields, for about two miles, when we fell in with our troops and informed the general of the situation of the Indians. It was now nearly day-light. The troops were immediately ordered to pursue them, for which purpose they embarked on board of the Batteaux, together with two hundred Indians belonging to a tribe hostile to those we were in pursuit of, and who had opportunely joined us at this place. General Arnold was rowed by two of them in one of their thin bark canoes. The current being very rapid, and we going against the stream, we did not reach Fort Ann till about sun-set. We perceived a man in the river, making towards our boat—we took him in, he proved to be one of our men, who had been taken prisoner by the Indians, and offered to conduct us to where they were.

We pushed on until we got within musket shot of the opposite shore, where the river is very wide. It was now within half an hour of sunset, when a numerous body of Indians suddenly made their appearance, from behind the trees which lined the shore; they showered upon us their bullets, as thick as hail-stones, so that we were unable to make good our landing, and it being now sun-set, General Arnold gave orders to retreat to the opposite side of the river. The British troops had also drawn their two field pieces to the bank of the river, which made sad havoc among our Indians' canoes. As soon as we had disembarked on the opposite shore, our general ordered us to make a great many fires to induce the enemy to suppose that we were very numerous, and that they might consequently expect us to renew the attack in the morning. This *ruse de guerre*, had the desired effect: about midnight a flag of truce arrived from the British, offering to give up to us all the prisoners that had been taken from us by the Indians, on condition, that they should not be allowed to serve against them, for the term of seven months, and that certain of our officers should be given up to them as hostages for the faithful performance of the terms stipulated; to this we readily consented, and the next morning they returned us all the prisoners, and took back with them some of our officers—but I cannot say how many there were; but among them was Captain Bliss, of the company to which I belonged.

We now ascertained that the British were advancing upon us, on both sides of the river from Quebec; and as many of our men were suffering from the small pox, our general gave orders that we should immediately return to Montreal, in order to make preparations for evacuating that city before the arrival of the British. On the second day after our return to Montreal, late in the afternoon, the order was given, "Retreat! retreat! the British are upon us!!" Down we scampered to the boats, in the greatest confusion, leaving our camp equipage, cooking utensils, and even our bread cooking in the oven, regardless of every thing, but our own immediate self preservation. We did not, however, forget our sick comrades who were assisted from the hospital down to the boats. When we were about half way across the river, the rain began to pour down in torrents, and it being excessively dark, it was difficult to land on the opposite side. We were all pretty well soaked to the skin, and many of our poor fellows, who were suffering at the time with the small pox, died in consequence of their exposure and the hardships they experienced.

As we landed, every one seemed disposed to take care of himself as well as he could, and the sick where left to shift for themselves. I found the way to an old barn, which I entered and soon ascertained that others had discovered the same retreat. I laid down, thinking to have a tolerable good night's rest, but I had hardly begun to get warm and comfortable, when some of our officers pushed open the door and knowing pretty well that some of us had ensconced ourselves in those comfortable quarters, they began to sing out lustily, "Turn out! turn out!! d——n you, turn out and march to join the army. Turn out! or we will fire upon you!!" Knowing it was too dark for them to see us, we made no answer at first, but at length we *woke up*, and told them we were ready to march, half way up to our knees in mud, a distance of three miles, where General Arnold was mustering his scattered forces. Seeing a wind-mill, near where I stood, I slipt into it unobserved, and going into the upper apartment, I laid myself down and slept comfortably until I was awakened at day break, by the drums beating to arms, when I re-joined my regiment, without being questioned by the officers. General Arnold called together the catholic priests and friars in the town or settlement where we were, and threatened them, that if they did not immediately procure a sufficient number of Carts and waggons to transport our baggage and our sick to La Prairie, he would set fire to the town.

Thus urged, a sufficient number of waggons were soon put in requisition for our purpose, and we set out on our march. Our road lay beside the river, so that we could plainly see the city of Montreal, and that there appeared to be a great many Britsh troops there, who were easily distinguished by their red coats.

We shortly passed a bridge, which we set on fire to prevent being followed; and presently after, we saw along the shore, a number of our boats which had landed the troops the night previous, for so rapid was the current, that many were carried a considerable distance down the stream before they were able to effect a landing; these were the boats we now met with, and among them, those which had contained the poor fellows who were sick with the small pox; and what a shocking sight now met our eyes! we beheld the dead bodies of these, our late unfortunate comrades, strewed along the shore! some had struggled, perhaps, with just sufficient strength to reach the land, there to perish with fatigue and exhaustion, probably, overwhelmed by their exertions, exposure and disease, had either been capsized or fallen into the water, and washed ashore, while others, who had safely landed by the assistance of those able to help them, were left during the night to shift for themselves, exposed to a heavy rain, without any shelter. General Arnold, in anticipation of our retreat, had previously caused considerable stores to be landed on this side the river, consisting chiefly of wines, butter, raisins, &c. &c., but we were obliged to leave the greater part of these desirable things behind us. The boats were ordered to be destroyed to prevent them from falling into the hands of the British. We made but a short stay at La Prairie, and hurried on to St. John's at the head of Lake Champlain; there we remained a few days to muster our scattered troops, and recruit their strength.

Our general having now procured a number of open boats, we all embarked for Ticonderoga. Being short of provisions, and without camp kettles or other cooking utensils, it may be supposed that our situation was far from being agreeable. Our daily rations consisted of only a pint of flour and a quarter of a pound of pork for each man, and every day, at noon, we used to land for the purpose of cooking our food. For want of vessels in which to mix our flour, we made and baked our cakes on pieces of the bark of the trees, but such cooking was any thing but tempting, especially to the sick, who fared no better than the rest. For myself, I did not fare quite so bad as my comrades, being a favorite with the officers, besides, being fife-major, I was not called upon to row, or do the least of what is called *Fatigue;* I also had my regular rest every night. I employed much of my time in playing lively tunes on my fife, for the purpose of cheering up my comrades, especially the sick, and took every opportunity to assist them and make them comfortable, as far as was in my power.

At length we arrived at Ticonderoga, where we found three regiments of troops from New England; they, with ourselves, were ordered to proceed immediately to Mount Independence, a high mountain, opposite Ticonderoga, which was covered with trees, very rocky, and abounding with snakes of all descriptions, especially black and rattle snakes. Here we made our encampment, and as there was plenty of cattle to be had, we were served every day with plenty of fresh meat, but being unable to procure any salt, many of our men were carried off by the flux, so that what with those we lost in Canada by small pox, and those who died at this station, we had but about one hundred men left out of a regiment of five hundred. Our general had contrived to procure three or four floating batteries; a schooner, a sloop and other small crafts, amounting in all to thirteen vessels, which were intended for our protection on the river. This we called our Mosquito Fleet. We had been here between two and three months, without any thing to disturb us, when a British ship hove in sight; she carried twenty brass six pounders, and was accompanied by a number of gun boats, well manned. Arnold commanded our mosquito fleet, but being overpowered by numbers, was forced to retreat.

All our troops were now ordered to march to Albany; during which, we suffered much for the want of tents to shelter us from the snow and rain, and being myself, now on the sick list, with the fever and ague, I began to feel the hardships I had to endure as almost intolerable. No sooner had we arrived at Albany, than we were put on board vessels with orders to proceed to Esopus; from thence we marched to Newtown, Pennsylvania. Two days after, we received orders to march to Trenton, New Jersey. The sun was nearly down when we crossed the river Delaware, and amidst a tremendous storm of rain, hail, and snow by turns; we proceeded at a slow pace, travelling all night, and between seven and eight in the morning, came in sight of Trenton. The first thing that occurred between us and the enemy, was the firing of a six pound cannon at us, which struck the fore horse that was drawing a three pound cannon, (the only one we had.) The weather being stormy and hazy, we could not see far ahead; we marched on, when suddenly, within two hundred yards of us, we discovered a body of between three and four hundred Hessians, commanded by Colonel Roll; they were paraded two deep in a line, and their commander on horse-back on their right; they made a full fire right at us, but I did not see any one fall. Our major (Sherbourn,) ordered us to fall back, about three yards, to pull off our packs and pile them by the side of the road. "Now my brave boys," says he, "pass the word through the ranks, that he who is afraid to follow me, may stay behind to take care of the packs." Not a man offered to leave the ranks, and we lost all our packs, for we did not return that way.

Having been out all night in the storm, our guns and powder were wet; orders were therefore given to charge bayonets; but of these we were very deficient. When we arrived within pistol-shot of the Hessians, they fired against us—we dodged, and they did not hit a man. Before they had time to re-load, we were within three feet of them; they broke in an instant and ran into the town, which was close by, and we after them, pell-mell. Many of them ran into a church, and we put a guard at the door to keep them there for the present, and some ran into the cellars of the houses.

We were then marched towards the market; when near it, General Washington came, up on horse-back and alone, to our major, and said, "march on, my brave fellows, after me!" and rode off. We passed by a number of dead and wounded Hessians, and at length arrived at the other side of the town, where we beheld five or six hundred Hessians, who, it appeared, had been taken prisoners by our army, before our regiments arrived, that morning. We were ordered to guard them down to the ferry and conduct them across the river. About nine hundred Hessians were taken prisoners this day, all Grenadiers; I saw between three and four hundred of them, who had contrived to escape, but how they managed it, I was at a loss to discover. While we were marching to the ferry, the Hessians, seeing some of our men with the Hessian brass caps on, which they had taken from the dead, voluntarily gave us their caps and put on their hats, which they had with them; at this, our men were much pleased, and it was laughable to see how ill the brass caps comported with the rest of their habiliments, they being all in a pitiable condition for the want of decent or comfortable clothing, and some even without shoes to their feet.

The next day after the Battle of Trenton, being two days after the expiration of the term of our enlistment, we received three months' pay. Twenty-six dollars was offered to every man who would remain with the army only six weeks longer. For my part, being worn out with fatigue and sickness, I had made up my mind to quit the soldier's life, notwithstanding the earnest solicitations of the officers, who told me I was the life and soul of the company, and that I was to be promoted to an ensign if I remained with them. I therefore, in company with a boy, (also a fifer,) took my leave of them and set out on my return to my parents in Boston.

ODONTALGIA.

Observations on Tooth-ache, by S. P. Hullihen, *of Wheeling, Va.*

There is no disease, perhaps, which attacks the human family so indiscriminately and so universally, as the tooth-ache; none which the dentist is called upon so often to cure, and none that he treats with less success.

There can be few things in surgery more erroneous than to call every painful affection of the teeth "tooth-ache," and to treat them all as one specific disease. As well might a wound in the scalp, a fracture of the skull, or inflammation of the brain, be called "head-ache," and treated as such.

Tooth-ache most generally originates from local causes, differing sometimes materially from each other. However, pains are oft-times experienced in the teeth, through that mysterious agent, usually termed sympathy: when the exciting cause may exist in a distant part of the system. Females are peculiarly liable to be affected in this way during pregnancy.

The pain of a tooth is always annoying, and sometimes exceedingly severe; but this is trifling, compared with consequences that frequently ensue from it. Diseases of the most malignant nature, and deformities the most unseemly to be beheld, are not unfrequently the results of tooth-ache, or rather the diseases which occasion it.

With these remarks, I shall proceed to treat, separately, of the different causes of tooth-ache, in the following order:—

1st. Tooth-ache from exposure of the nerve.
2nd. From fungus of the nerve.
3d. From the confinement of pus in the internal cavity of a tooth.
4th. From a diseased state of the periosteum covering the fang.
5th. From sympathy.

Tooth-ache from Exposure of the Nerve.

The nerve of a tooth, is intended, by nature, to be protected by a thick bony covering, and when exposed either by accident or disease, it becomes extremely painful from the action of air, food, fluids, and other irritating causes.

The pain is of a sharp throbbing character, and always more or less severe, in proportion to the amount of injury or irritation, that the nerve has received. The pain is generally very easily palliated, but it will immediately return upon the slightest irritation of the nerve. The nerve will sometimes remain troublesome for several months, in other cases it will frequently suppurate upon the first or second severe paroxysm of tooth-ache. But in all cases where the nerve of a tooth becomes fairly exposed, it will sooner or later invariably suppurate, leaving the crown in a state of total necrosis.

Treatment:—The treatment of this kind of tooth-ache may be divided into the palliative and the radical. The palliative, consists in benumbing the sensibility of the nerve; the radical in destroying the nerve.

To benumb the sensibility of the nerve.

The essential oils, opium, kreosote, and various other stimulating remedies have been used, and with more or less success, when actually applied to an exposed nerve. But from the very prevalent opinion that *all* pains of the teeth proceed from an exposure of the nerve, these remedies are often employed, when it is not possible in the nature of things that they should prove in the least beneficial.

The best perhaps of all palliative remedies is a mixture of morphia and kreosote, made into a thin paste. This preparation may be applied to the nerve on a small pledget of lint, and will most generally insure immediate relief.

But in order to be generally successful in destroying the nerve of a tooth, it is necessary to resort to different means in different cases.

When the crown of a tooth is excised or broken off, leaving an exposed nerve, there is no means of destroying it so efficiently as the actual cautery. The instrument should be highly heated and plunged quickly into the nerve down the whole length of the fang, and withdrawed the same instant. The nerve is thereby disorganized, and destroyed instantaneously, producing but little or no pain. I am aware that much has been said against the use and practicability of the actual cautery in destroying the nerve; that it has been denounced as "unscientific and barbarous in the extreme;" but I must confess that I am unable to view it in such a light, and therefore beg leave to differ in this point, from many of the most scientific and respectable dentists.

But when the crown of a tooth is to be preserved, and the nerve is exposed, the use of the cautery is generally impracticable. But in all such cases where the tooth has but one fang, the nerve may be crushed. This is done by taking a small wire or splinter of hickory, so shaped, as to correspond with the internal cavity of the tooth, and plunging it into the nerve, down the entire length of the fang. By this operation the structure of the nerve is completely broken up and destroyed. But when a tooth has two or more fangs, neither the cautery nor the crushing of the nerve can be resorted to with success. The nerves of such teeth should be suffered to remain unmolested until they suppurate; a process, by which nature sooner or later invariably removes every exposed nerve. With this view, the nerve should be covered with a thin plate of gold or silver, in such a manner as to prevent the least possible pressure on it, and the tooth should then be plugged. A tooth treated in this manner will sometimes remain free from pain for several months, but at length it will become a little painful and appear longer than the rest, and finally sore to the touch; symptoms that indicate that the nerve is suppurating. The plug should now be immediately removed and the pus suffered to escape through the opening in the crown of the tooth. If this be neglected an alveolar abscess will form. Of this I will treat at length, when I come to speak of tooth-ache from the confinement of pus in the internal cavity of a tooth.

Tooth-ache from fungus of the nerve.

Fungus of the nerve, so called from its occupying the natural cavity of the tooth, most probably originates from a remnant of the dental blood vessels. It always attacks teeth in which the nerve has suppurated, and is of a deep red color; very soft; bleeds freely upon the slightest touch; is sometimes totally insensible, at others, highly sensitive, giving much pain of an incessant character; entirely free from any darting or throbbing sensation; and when small and painful, is frequently mistaken for an exposed nerve. It varies in size, from that of a pin's head, to a pea, and larger. It is sometimes, when small, deeply situated in a fang; but more generally protrudes, filling up a cavity formed by caries.

TREATMENT.—To destroy this diseased growth, is very difficult, and I may say, impossible, except in such cases, as permit the actual cautery to be applied to its root; and, as the disease commences in the very foramen of the internal cavity of the fang, this means is narrowed down to very few cases when at all practicable. When a tooth becomes painful from this affection, it is only necessary to make the fungus bleed freely, to ensure immediate relief; but in all cases, where the growth cannot be completely eradicated, the tooth should be extracted, for there is no disease of the mouth, which makes the breath so intolerable.

Some time since, a young lady, about seventeen years of age, applied to me with a growth of this kind, in each of the second molares of the under jaw, which had assumed rather a novel character. She stated that the fungi had made their appearance in both teeth at the same time, about four years before, and that for the last two years she had been much troubled with a bleeding from them, which occurred regularly once a month, and continued several days. She being anxious to have the teeth saved, I destroyed, to all appearance, the morbid growth, and plugged the teeth. In a few days they became sore and painful; the plugs were removed, and a slight bleeding commenced, which continued for three or four days, and then the tumours entirely disappeared. I was therefore induced to plug them again; but in about three weeks, the teeth became sore, the plugs were removed, and a bleeding ensued as before. I now suspected it to be a *vicarious menstruation*, which it proved to be, and mentioned the case to the family physician. At his request, I plugged them again, and the result was precisely the same as before. The teeth were then removed, and the patient was put under a course of treatment by her physician, which effected a cure.

Tooth-ache from the confinement of pus in the internal cavity of a tooth.

Whenever the nerve of a tooth is rendered near the external surface, by caries, fractures, or from the absorption and receding of the alveolar process and gum, or by other causes, it is subject to much irritation, varying however in proportion to the extent and loss of covering.

Thus a greater or lesser inflammation of the nerve, neessarily ensues, producing the following very different effects. When the inflammation is slight, and comes on gradually, some dormant vessels are stimulated to action. A bony deposite takes place in the internal cavity of the tooth, and the nerve is again completely protected from all external irritation. But in a great majority of cases, inflammation is induced more rapidly and runs sooner or later to excess. Suppuration of the nerve is the consequence, and from this result may be traced the true cause of many diseases of the jaws and mouth, not generally understood.

Tooth-ache, from the confinement of pus in the internal cavity of a tooth, occurs more frequently, than any other variety, except from exposure of the nerve. At first the tooth is painful, only when hot or cold fluids pass over it, and may continue in this situation for some time. At length, a steady gnawing pain supervenes, and then the tooth begins to get sore, and appears a little loose and longer than the rest. About this period the pain assumes a very different character, darting from the tooth along the courses of the nerves, to the temple, ear, and side of the head, and to the teeth of both jaws on that side. Within twenty-four hours, the face begins to swell, and the pain changes to one of a constant throbbing description; symptoms which indicate that an alveolar abscess is forming.

When a tooth, in the manner described, becomes painful, the nerve is about suppurating; when it appears longer than the rest, loose, and is very sore, the nerve has suppurated, and the pus is beginning to ooze out at the extremity of the fang, where the vessels enter, producing much pressure, hence the sharp darting paroxysms. When the cheek begins to swell, the matter is effusing between the alveolus and its lining membrane, and occasions the throbbing pain, which always accompanies the formation of an alveolar abscess. The true abscess of the antrum maxillare, originates in like manner, from the same cause, when the fangs are very near or penetrate into that cavity.

There is now and then a case that differs materially from the general progress of this disease. The nerve may suppurate, and the face swell slightly, and both pain and swelling subside, without the development of an abscess. When this occurs, the matter is insinuated between the end of the fang, and the membrane covering it, forming a sac about the size of a pea, and sometimes larger, which may be felt distinctly in the gum, opposite the end of the fang. By pressing on it, a fullness, or sensation of pressure is felt in the tooth. But in time this sac will burst, and an alveolar abscess will be the final result.

TREATMENT.—As soon as it is ascertained that the nerve is suppurating, the tooth should be trepaned, or drilled. The matter is thereby suffered to escape as soon as formed, and the patient is immediately relieved from pain. In such cases, when the matter has even begun to ooze out at the end of the fang, and the face has not yet become swollen, the same treatment should be observed, and will most generally prove successful.—But when the face is already swollen, and the pain is of a throbbing character, there is no remedy but the extraction of the tooth.

Tooth-ache from a diseased state of the Periosteum covering the fang.

This disease is an inflammation and thickening of the periosteum at the point of the fang, causing the formation of pus, and is entirely confined to teeth in which the nerve has suppurated, and produced an alveolar abscess. It is true, the periosteum at the point of the fang becomes slightly inflamed, during a severe inflammation of the nerve, but suppuration is never the result of such inflammation, independently of the nerve, and never occurs until after the nerve has first suppurated, causing an alveolar abscess. The suppuration of the nerve, and the formation of an abscess is always the primary cause of this disease. The pain is generally of a dull, heavy character; the tooth becomes a little sore, the gums very much inflamed, and of a bluish tinge, immediately over and along the whole length of the fang; sometimes the gum is puffy opposite the end of the fang, and the pain of a throbbing description. In such cases, matter is forming, and a partial filling up of an old alveolar abscess takes place, forming, what is usually termed, a "gum boil." It is rarely, if ever, that the face becomes swollen from an attack of this kind of tooth-ache.

Treatment.—The pain may be greatly palliated, by making an incision through the gum, along the entire length of the fang, and then applying a roasted fig, or bruised raisins to the gum; but as the pain is almost sure to return upon taking cold, the extraction of the tooth should always constitute the treatment of this variety of tooth-ache.

Tooth-ache from sympathy.

It is well known that the human system is sympathetically connected, in all its parts, by the nervous system; and yet some organs from being more intimately connected than others, sympathize together more frequently.

During the formation of an alveolar abscess, there is much pain and inflammation in the offending tooth and surrounding parts; the nerves become involved and irritated; the irritation extends to all the teeth of both jaws on that side, and to the ear, temple and scalp. Sometimes each tooth sympathizes in its turn, so that some one is always more severely affected for a short time than the rest, and this more pungent sensation, is continually changing from one tooth to another, and to other associated parts.

Sympathetic tooth-ache occurs very frequently during pregnancy, and is evidently induced, sometimes from an increased, at other times from a diminished action, dependent on the peculiar state of the general system. But in either case the teeth are almost invariably diseased, and the painful sensation, exclusively confined to them. Sufficient indications however, are always present, and so distinctly marked, as to enable the practitioner at once to determine whether the pain proceeds from torpor or an inflammatory action.

Treatment.—When tooth-ache is induced by direct sympathy with a diseased tooth, or the results arising from one, the cause, if possible, should be removed; but if the exciting cause exists in a distant part of the system, blood-letting, and purgatives will sometimes be indicated, and when so, may be recommended. But when a painful sensation is produced from want of action, or natural stimulus, the teeth *should not be extracted,* unless, when so much decayed as to render them useless in mastication. For many useful teeth are thus affected, and are always easily relieved, and often entirely cured by any highly stimulating application to them and the gums. To brush the teeth and gums frequently every day with a stiff brush, is very advantageous, and, perhaps, more generally efficient than any other remedy.

Exostosis, is another disease of the teeth, which occasions the most intense and excruciating paroxysms; but as the pain is not generally felt in the tooth, nor its paroximate parts, it cannot, with propriety, be considered under the head of tooth-ache, and may, therefore, form the subject of some future paper.

ON PLUGGING TEETH.

[BY S. L. STRINGFELLOW.]

In fulfilment of my promise, I send you the following article on plugging teeth, or rather the different methods of stopping carious teeth; and in so doing, it becomes my painful duty to notice some of the impositions practised on an unsuspecting community.

One that I have recently met with, is in a lady's teeth, the cavities of which were partly filled with cotton and then completed with foil. Others again present themselves to me, that are about two thirds filled with tin and covered with gold. And in addition to these, I find a great number filled with gold, and the decay not half removed. In many cases, when the teeth have been plugged, the plugs are so soft, that I can pierce them through with a pointed plugger. I occasionally meet with some, which have been filled with an *amalgam* of lead, or tin and mercury—disguised under the name of "*patent paste.*" And of all the methods or preparations for filling the teeth, this is, beyond doubt, the most dangerous and censurable, for it is trifling with the constitution, teeth and pocket. It enables, however, a certain class of practitioners to operate at low prices, which is apparently all that some inquire after, who are regardless of the qualifications of the operator. This is not to be understood, I would here remark, as ascribing to those who charge high prices, the performance of good and faithful operations. On the contrary, there are many who charge an extravagant price and perform bad work. In this instance, they are truly "high prices," for it would be dearly paid for, if it was performed gratis! I wish it to be distinctly understood in one point, and that is, no dentist can furnish the best foil and plug teeth in a scientific manner, for the prices for which some are operating. As the object of the journal is to improve and enlighten the profession, I deem it the duty of our professional brethren to contribute all such information as may tend to that effect.

With these few prefaratory remarks, I will now proceed to describe my method of filling decayed teeth, and hope that others will follow suit, so as to render the journal invaluable to the profession, by laying before them, the several improvements of the day, in the dental-art.

The case which I now will present for an illustration of my plan, is the separation of, and plugging the front teeth, as they require the neatest and most careful operation. I commence by selecting a file of suitable thickness, that is perfectly flat and true. I then separate the teeth in such a manner, as to prevent them from coming in contact again; and at the same time, am careful to leave them in their natural shape, by rounding the corners and edges, which has the desired effect, of imparting to them a natural appearance, and divests them of any unpleasant sensation in the mouth. I always keep a quantity of small excavators and drills of various sizes and shapes, which enable me to remove the carious and diseased portion of the teeth perfectly, for I never plug a tooth until it is entirely removed. I also take care to make the edges of the cavity very smooth, and the inside of the cavity, only a trifle larger than the orifice; for if it is much larger in the bottom, it will be difficult to fill it thoroughly. Having it thus prepared, I wash out the cavity by forcing in water, with a small syringe, made for that purpose. I then take cotton or lint on a small instrument, for the purpose of drying the cavity, and keep it free from all moisture during the balance of the operation, by means of a linen handkerchief. I cut my foil (which is No. 4,) in narrow strips, and fold it lengthwise twice, making it four double. The pluggers which I use, are small flat instruments, for filling the cavities of the front teeth, and large strong ones for consolidating the plugs. I fill the cavities, so as to make the edges of the foil present themselves to the surface, permitting the gold to project beyond the cavity. I then shrink it down, as long as it will yield, and file off the surface that has become hard, leaving it rounding. After this, I take a strong instrument and shrink it again; then using a fine half worn file, bring it level with the surface of the teeth. Then procuring a fine linen tape, four inches in length, I wet it and cover the tape with pumice stone, which has been reduced to a very fine powder; placing the flat part of the tape, full of the powder, on the side of the tooth that has been filed and plugged, drawing it round three sides of the tooth, backward and forward. I treat it in this manner until the tooth and plug has a fine polish and perfect surface; then make use of a finely polished burnisher, which will leave it as refulgent as a mirror.

The Publishing Committee acknowledge with pleasure, the friendly services of Mr. Gidney of Manchester, England, in obtaining the respectable list of subscribers in that Kingdom, found in our revised catalogue. These foreign contributions, added to the constantly increasing patronage which our undertaking commands in our own country, give fair promise of permanency to this work, in spite of all the embarrassments experienced from the derangement of the national currency which has delayed our remittances from distant agents, and thus rendered it proper to give the numbers less frequently than was at first intended. Hereafter the Publishing Committee hope to give a new number once in two months at farthest, and more frequently if their agents and special patrons shall become more punctual in their remittance of the necessary funds.

THE AMERICAN JOURNAL

OF

DENTAL SCIENCE.

VOL. I.—NO. VI.

MEMOIRS

OF THE LIFE OF THE LATE MR. JOHN GREENWOOD,

Mechanical and Surgeon Dentist, of New-York City:—Compiled by

E. BRYAN.—(CONTINUED.)

After I had been between two and three months at home, I began to get tired of a life of inactivity. There was then, in the harbor of Boston, a privateer ship, ready to start on a cruise to Barbadoes, in the West Indies, in the expectation of intercepting some of the outward-bound West India fleet of British merchantmen.

I had a great desire to go to sea, and this was too good an opportunity to be lost, so I went on board and entered as steward's mate, but I was afterwards allowed to be rated as midshipman. Our ship was called the "Cumberland," commanded by Commodore Manly. She carried eghteen guns, six pounders, and a crew of one hundred and thirty men.

We soon fell in with a prize which was a large ship or tender filled with troops from St. John, N. B., bound to Halifax, N. S; we had no difficulty in taking her, as she had been dismasted in a gale of wind, and was then rolling about like a hogshead, and of course, unable to get away from us, or make any resistance. She had on board, clothing for the troops and some hogsheads of wine; all the former we transferred to our vessel and some of the latter. After we had put our prize in sailing trim, by rigging her with jury masts, &c., we put a prize-master on board and ordered her to Martinique. We then pursued our course for Barbadoes, and in a few days came in sight of the island. We made the signal flag-staff late in the afternoon, and stood off from the land, with her head to the eastward, all night, under easy sail, in the expectation of seeing a prize in the morning. It was our fate, however, to be grievously disappointed. The next morning, at seven o'clock, a vessel hove in sight; she bore down towards us with all sail set; we also set all sail and stood for her, and before we could discover what she was, we found ourselves close under her larboard quarter. She proved to be the Pomona frigate of thirty-six guns, nine and twelve pounders, with three hundred men on board. We now thought it time to tack ship and make every effort to escape, but it was to no purpose,—she evidently gained upon us—and as the weather was squally, she would sometimes be near enough to give us a shot or two, which we returned from our stern chasers, aiming at her rigging, some of which we cut away, which prevented her from coming up with us, as soon as she otherwise would have done.

Here I will relate an instance of the presentiment of approaching death, which occurred in the case of the captain of the main-top, during our "running fight" with the frigate. He came down from the main-top and went into the cock-pit for a drink, which he predicted would be his last, as he said, he was certain he should never come down again alive; and so it happened. He had not returned to his post in the main-top but a few moments, before a double-headed shot from the frigate cut his body in two, which fell, a frightful spectacle, on the deck, and which made considerable impression on those who had just before laughed at what they considered his foolish prediction.

Finding that our chance of escape, became every hour less, our captain determined, as a last resort, to throw over eight of our guns; he also started some of our water, and headed our vessel three points free, which he had no sooner done, than the frigate, being right in our wake, kept her course and run up right under our larboard quarter and gave us four or five double-headed and round shot—some of which went into our rigging, and one ball striking abaft our fore chains, went through and through the vessel, which made her shake tremendously. They ordered us to strike our *rebel* colors; but our captain not much liking to give up his vessel whilst any chance, however remote, remained to be tried, conceived the idea of boarding the frigate, which he thought would come so unexpectedly upon the enemy, that we might succeed, especially as ours were all picked men, and not one on the sick list. His plan was this: Our vessel being to the leward, he meant to clap her helm down and so let the frigate run her bow right amidships of us, which would have sunk our vessel, (the sea running at the time very high,) and while our vessel was sinking, our men were to jump on board the frigate, as if to save themselves from drowning, and commence the attack, armed with cutlasses, pikes, &c. In order to accomplish this *ruse de guerre*, our captain called all hands aft, and briefly stating his plan, ordered every one to arm himself from the chests, with cutlasses, pikes, &c. But our captain had either forgotten, or had never informed himself of the extent of our arms: on opening the arm chests, there were but thirty cutlasses, and a few miserable pikes. He therefore at once ordered our colors to be struck amid the impatience of the British commander, who during this interval was threatening to fire into us and sink our vessel if we did not immediately surrender. The striking of our flag was the signal for a general plunder of the vessel by our men; they were no longer under any subordination, and every thing on board was considered fair game. The first thing they thought of was the liquor; they broke open the store room and distributed the liquor by pails full until they could drink no more; some, however, broke open the packages of the British regimental clothing, which we had taken a few days before, when a general scramble took place for these military dresses. Every one would put on his new red coat, and it was really laughable to see, in addition to their drunken "quips and cranks," the ludicrous figure they cut:—some had got coats too long—others, too short: some were too tight, while others were as loose as a sack—which, contrasting with their tarry trowsers, dirty shirts, and begrimed visages, presented such a scene as would have vanquished the gravity of an anchorite.

The British commander ordered our boat to take the captain on board the frigate, but not one of our sailors was in a condition to pay any attention to any thing but drinking and scrambling for the spoils. The petty officers at length got down the jolly boat, and in her our captain and two men were conveyed to the frigate; against her main chains, our boat was directly after, violently dashed, by the turbulence of the waves, and stove to pieces; the frigate's long boat was then sent to take the men from our vessel; as soon as they were all on board the frigate, they were mustered on the quarter deck; the-master-at-arms was ordered to search every one and take away his arms and knives; all but the captain, first and second lieutenants, doctor and captain's clerk, were then ordered into the hold, where, most of them being drunk, soon fell into a sound sleep. For my part, I could not sleep for the heat, and the closeness arising from so many being stowed together in this hot climate, so, seeing the hatchway left open to let in the air, I cautiously climbed up and sat on the edge of the hatchway to enjoy the cool air, and looking round, I perceived that the sentry near me had fallen asleep, I therefore, passed by him, and went down another scuttle, into the boatswain's store room, where, treading upon something, which I at first took to be a sail rolled up, but which felt like the body of a man, either dead or asleep, I scrambled up again, faster than I went down, and resumed my former seat on the hatchway. The sentry was still asleep, and as I knew he would be severely whipped, if caught in that situation, I resolved to wake him, although I was aware that in so doing, I should forfeit my seat on the hatchway. When I awoke him, the first words he uttered were, "for God's sake go down again into the hold." I urged him to let me remain a little longer, but upon his assuring me that it was as much as his life was worth to do it, I returned to my companions.

In three days we arrived at Barbadoes; we were then landed and marched to the prison there, and as we passed along, some of the negroes threw stones at us, others called out "der goes de *new Gengelan men*, (meaning New England) dat used to bring us de fish wid only one eye" alluding to the *split mackerel*, that we had supplied them with, of which they got but *half* a mackeral for their daily allowance of fish, whereas, when they had herring served out to them they received a *whole* one, owing to the difference in the size of the two kinds of fish.

Although a little out of place, it may not be uninteresting to describe the flag of our recently surrendered vessel, the Cumberland. It consisted of the figure of a large snake, coiled into thirteen coils, emblematical of the thirteen states, each coil represented, as if *cut apart* from the others, and underneath these words, "*Join or Die*," alluding to the power, which a snake is said to possess, of preserving its life, when cut in pieces, by joining together its dissevered parts. Over the snake, was the figure of a pine tree, painted green. The flag itself was white, the snake was painted black, as was also the motto, under it. There being of course no national colors at that time, every vessel adopted such as best suited the fancy of its owner or commander.

One day the turnkey informed us that the officers of some of the men of war, then laying in the harbor, would the next day select about half of our men to be distributed on board the different vessels for service; this news did not much please me, and five or six of us resolved in the night, if possible to break out of jail, and had nearly succeeded in cutting through the wall, when we were discovered by the patrol, and prevented from making further efforts. However, as I preferred being where I was to going on board a man of war, I determined to sham sickness, so calling to our doctor (who, together with the officers had liberty of walking in the prison yard) I told him my plan; he gave me two emetics, one of which I took just before the arrival of the officers, but fearing it would not take effect, I also took the other, which made me so sick that I could not walk and I was left behind.

Soon after this our commodore, Manly, handed us a saw, such as is used by surgeons, with a brass back, with which we attempted to saw through a large iron-wood post but it was so thick, we could not succeed, (although we sawed on both sides,) on account of the *back*, which prevented its passing through. He told us he and the other officers intended to attempt an escape out of the jail yard into the town, and then out of the harbour by any means they could find. He said he had constructed a ladder for scaleing the walls, which he would reserve for our use, but desired that this plan should be kept secret among the petty officers, as it would be in vain for every one to attempt an escape at once.

Although we failed in our efforts, we had the satisfaction of learning, soon after, that all the superior officers made their escape out of the jail yard to the harbor, where they seized a schooner and put off to sea, passing by the men-of-war without suspicion.

In one of the apartments of the jail there were about thirty Spanish prisoners of war, who made such an incessant noise, continually quarrelling and fighting among themselves, as frequently to alarm the inhabitants of the town. One day in particular they were uncommonly turbulent and stabbed one of their companions in the breast; the jailor wished to take the ring-leader, but durst not venture alone—he therefore asked us to go in and secure him, this we readily agreed to do, and succeeded in bringing him out, and he was afterwards chained and handcuffed.

At the expiration of about five months from the time of our first arrival at Barbadoes, we were rejoiced to learn that a Cartel had arrived from Martinique, with instructions for our release. With as little delay as possible, we got on board the vessel and were soon landed at Port St. Pierre, in Martinique. Being pretty destitute of clothing and every thing else, I had made up my mind to enter on board a French privateer schooner then laying in the harbor. Fortunately however, I was recognised by an old school fellow, who hailed me on the beach and informed me that he was mate of a brig from Boston, then laying in the harbor, and that my father's cousin W——, was the commander. By his persuasion I went with him on board and saw the captain, who very kindly procured me a passage in a vessel to Piscataway, about sixty miles from Boston and gave me a hogshead of molasses to pay my expenses from thence to Boston. This vessel, being very leaky, the men had to be constantly at the pumps, at least such of them as were able, for we had the yellow fever on board, which carried off the most part of them. On our arrival at Piscataway, we found there the United States ship of war, called the Hampden, and we learned that her object was to impress men for the famous "Penobscot expedition," which was then fitting out from Boston.—Soon after our arrival, an officer of the Hampden, boarded us for the purpose of pressing our men to serve as seamen on board his vessel, but as soon as he discovered that our men were dying below of the yellow fever he left us with precipitation.

I then went on shore and sold my molasses, the proceeds of which enabled me to pay my expenses home, which being but sixty miles distant, I walked all the way, without expending much of my money, congratulating myself as I went, on the many adventures I had met, and the dangers I had escaped in the short period of my absence, it being only about six months since I had left my father's house.

My parents were delighted to see me again under their roof, and took every means to render my condition a happy one; but, not many days after my arrival, I fell dangerously sick and was confined a long time to my bed and though my recovery was deemed doubtful, I gradually got better and at length my health being thoroughly re-established, I began to long for another cruise. I entered as master-at-arms on board the ship ——, DePorter, Master, of Boston. She carried twenty eight six-pounders and one hundred and fifty men.

It was in the month of November 1778 or 9, (I have forgotten which) when we set sail with orders to cruise off the Harbor of New-York; however we soon experienced a tremendous gale which blew us into the gulf stream, and continued six days and nights incessantly so that our vessel, which had seen its best days, began to leak to such a degree that we were obliged to keep the pumps going day and night, still the leak increased, so that we had four feet water in the hold, and we expected every moment to go to the bottom. When the gale abated, the captain finding our ship was not fit for a northern latitude in the winter, concluded to sail for the West Indies. When off the Island of Jamaica we fell in with three vessels which we captured and carried into Port-au-Prince. Here we repaired our vessel as well as we could, and cruised round

Jamaica for sometime, occasionally going ashore for fresh provisions, and frequently disguising our vessel in such a manner that she could not be recognised. Sometimes we painted her sides red, yellow or black, and sometimes made signals of distress.

We captured a small Spanish schooner, she proved to be a pirate, belonging to the Island of Cuba. We took out the men and manned her ourselves. She was a convenient vessel for our purpose, mounting swivel guns. I was put second in command, on board of her. We were ordered to cruise off a small cape, near Black River, Jamaica, so that the Droghers and other small vessels would not see us until they came close upon us, when, to get clear of us they would run directly to our ship, which lay, some distance from the shore, with British colors hoisted thinking to get protection from what they supposed to be an English ship. By this device we took eleven sail of brigs and sloops, including one ship of eighteen guns, all of which we carried into Port-au-Prince.

Early one morning as we were coming out of the bite of Leogan, in the Island of St. Domingo, we observed three vessels which we took to be ships of war making towards us, but as our vessel was a very fast sailer, and had often in consequence escaped from superior force, we were not much alarmed; however we thought it most prudent to wear ship immediately and return to Port-au-Prince. We soon discovered that the three vessels were coming up with us, very fast; they brought the breeze in with them and we were soon compelled, as our only chance of escape to run our ship into a small harbor called Petit Guave, in doing which she struck on the rocks, which caused her to leak to that degree that in a short time we had four feet water in the hold.

The English ships followed us as close as they could, the fort ashore opened a fire upon them, and they left us as soon as they found out that we were on the rocks. We soon got our vessel afloat again and immediately made for Port-au-Prince, where we had been but two or three days when she filled with water, from the injury received on the rocks and sunk to the bottom and was entirely lost, beyond the chance of recovery, together with every thing on board.

By this severe disaster, I, as well as all on board lost every thing we had possessed and were left in a most destitute condition. My disposition however, was such, that I never was disheartened at any of the many misfortunes that befel me—*hope* cheered me on. I remember lately reading in Goldsmith's poems, which I borrowed of the second lieutenant, (who was somewhat of a literary man, and, I believe also something of a poet, for he was very fond of writing verses and reading poetry, during his leisure hours,)these lines on *Hope*, which I thought were *now* particularly applicable to myself:—

" Hope like the glimmering taper's light,
Adorns and cheers the way;
And still as darker grows the night,
Emits a brighter ray."

Although I had no gloomy forebodings of the future, yet I could not avoid reverting to the past, with feelings of pleasure akin to sadness.—I thought of the many pleasant hours I had passed in company with my fellow officers for they were all good and brave men and of sociable dispositions. The many "hair breadth escapes" we had had together, though they served to bind our hearts together, yet they could not prevent our being separated from one another—some going in one direction and some in another. But before we part, I will relate one of our adventures on the Island of Jamaica, which we called a *frolic* and which, although it resulted in nothing advantageous, yet it serves to show the daring spirit which animated the men of that time.

One night our first lieutenant and twelve of our officers, got into our barge, which was rowed with seven oars, and landed not far from where our ship was at anchor. We left two of our number to take care of the barge, and proceeded along shore, passing several plantations at a distance, until we had gone about three miles, when one of our party discovered a flag-staff. Our lieutenant immediately ordered us to secrete ourselves in the bushes, while he went to *reconnoitre.* This was necessary, as it was bright moonlight. In half an hour he returned, saying it was a small fort, manned with Creoles and that there was a brig laying in front of the fort, and that if agreeable to the rest he would take the fort and cut out the brig—to this we all consented and were ordered not to fire until we got close in among them, then fire and immediately draw our swords and cut them down or drive them out of the fort. We divided our force into two parties—five on one side of the road and six on the other. As soon as we arrived at the fort we rushed in; the sentry fired, but without effect, and the Creoles being surprised and panic struck, ran out at the rear entrance of the fort into a sugar cane field. In a few minutes they rallied and commenced firing their small arms at us. I proposed that we should spike the cannon of which there were seven, but we had no means of doing it, so after the lapse of about a quarter of an hour from the time of our getting possession of the fort, we concluded it best to evacuate it and retreat to our barge as quick as we could. Thereupon we all started and ran, as fast as we could, the Creoles flanking us in the bushes; we all arrived safe to our barge, but two, who gave out from fatigue (it being a three mile race) and hid themselves, in the bushes; also one of our men was wounded in the neck, as he was jumping into the barge. We rowed vigorously until we got on board our ship when we weighed anchor and stood off and soon after arrived at Port-au-Prince, which was our place of general rendezvous. One of our party who was left behind at Jamaica, soon after made his escape and rejoined us at Port-au-Prince, he informed us that there were fifty men in the fort and that when we commenced the attack, they thought from the noise we made, that we were Spaniards from Cuba, and supposed us to be at least two hundred in number, and when they found we were but eleven, they were astonished at our boldness.

DENTOLOGIA.

We have been asked, by perhaps, some twenty or thirty of our professional brethren, since the notice which we gave in a preceding number, of the above admirable Poem, where it could be had; and on being informed that it had originally been published only for private distribution, and that the whole edition had been disposed of, expressed great regret. They were, therefore, highly gratified at the announcement in the last number of our journal, that the authors, Messrs. Solyman Brown, and Eleazar Parmly, had consented to its re-publication in this periodical; and that it would be commenced in its next issue. This, as will be perceived, has been done, and our subscribers will soon be possessed of a work that should adorn the library or centre table of every member of the profession. The beauty of its composition, and the information which it imparts, cannot fail to please and interest every description of readers. No recommendation of ours, therefore, is necessary to ensure for it a cordial reception and an attentive perusal.——BALT. ED.

BALTIMORE COLLEGE OF DENTAL SURGERY.

Our readers will perceive, by reference to our advertising page, that an institution has been established in Baltimore, under the above designation.

We heartily congratulate the dental profession upon this event—for event it is—in the progress of that science to which we have devoted ourselves, and in the advancement of which, every dentist worthy of the name feels deep interest.

There is no good reason for the inferior rank, that dental surgeons have been compelled to take, in comparison with professional men.—Why is the surgeon, who amputates a limb, or dresses an ulcer, more highly to be esteemed than he who confines his attention to the diseases of the mouth and dental arch? Is the knowledge of the former acquired with more laborious industry? Is his skill the result of more persevering research and careful experience? Does the operations he is called upon to perform, require more judgment or greater nicety than those which devolve upon the practitioner of dentistry? No man acquainted with the facts, in each case, will respond affirmatively to these inquiries. He who devotes his life to the alleviation of the sufferings of his fellows, is a *respectable* man; and he who brings knowledge, carefully acquired, to aid in this object, is a *scientific* man—It matters not whether his efforts be directed to assuage a fever, or remove a pain,—to save life, or to render it comfortable—the object, the honor, the motive is the same,—and so it should be, in the regard of those who are profitted thereby.

Why then, we again ask, has the practice of dentistry held so low a place in public estimation? The answer is ready,—because a large number of dentists, so called, are neither capable nor worthy. The public have rarely hitherto been able to distinguish between the man of science and the impudent adventurer. Dentistry has been one of those three cities of refuge to the ignorant and unfortunate; and very often when the choice was presented to the mind of an individual scheming for existence, between an office under government, enlisting in the army, or practising dentistry, the latter has been preferred as more accessible than the first, and less laborious than the second. All know the result of this evil. Men, who are conscious of deserving nothing, are ready to labor for half price. Honesty must die in such competition, or survive like an humble flower overshadowed by rank weeds.

Knowing these things to be so, we cannot but rejoice in the establishment of an institution for the education of dentists. We are glad too, that the college has been arranged upon a liberal scale. A dental surgeon ought to be sufficiently well informed to make him a companion for the best educated physicians and surgeons in the land. He ought no longer to be satisfied with a secondary station; and should the present effort be sustained, and we doubt not but it will be, he will no longer be compelled to be contented with it.

Two-thirds of the board of visitors, are medical men,—this is as it should be. In the noble pursuit of science, there is no room for petty jealousy. It has its seat only in contracted minds;—there let it remain, buried where it can injure none, save the heart that harbours it.

BIBLIOGRAPHY.

The Select Medical Library and Eclectic Journal of Medicine, edited by John Bell, M. D., *Lecturer on the Institutes of Medicine and Medical Jurisprudence; Member of the College of Physicians of Philadelphia, and of the Amer. Philos. Soc., etc. Vol. III, No.* 10,—*August,* 1839.—*Philadelphia, Haswell, Barrington & Haswell.*—*pp.* 240.

The above work is published monthly; each number contains 240 pages—thirty-six of which are devoted to the latest medical intelligence and bibliographical notices of new medical works;—the balance, 204 pages, to the re-publication of standard works on medicine.

Among medical men, this work is too extensively and favorably known to need any commendation from us. The distinguished ability with which it is conducted, has gained for it, a justly deserved, high reputation. We would, however, invite more particularly the attention of the members of our own immediate profession to it, feeling assured that they would not only derive interest, but also much advantage from the perusal of its pages. The importance of a more general and extensive knowledge of medicine than is possessed by a large proportion of the profession, is now universally conceded; but we forbear to enlarge upon the subject here, having spoken upon it somewhat at length in another part of the present number of this journal, to which we would refer the reader.

The works that have been re-printed in "The Select Medical Library," are all valuable, and should be possessed by, not only every member of the medical, but also those of the dental profession. Among them are those of the celebrated John Hunter, including his "*Treatise on the Natural History and Diseases of the Human Teeth,*" with notes by Thomas Bell, F. R. S., &c. &c., which is contained in the August number, and which, without Mr. Bell's notes, is now being published in "The American Journal of Dental Science," with notes by the New-York editor. The works of Mr. Hunter, of themselves are worth at least two years' subscription to the Library, for with the exception of this edition they are very scarce.

The August number of the "Eclectic Journal of Medicine," contains a very interesting case of Catalepsy, taken from the Southern Literary Messenger, which, on account of the connexion it seems to have had with a carious tooth, we should like to have copied into our own pages, but are prevented from doing so, in consequence of its great length. We may, however, present it to our readers in some subsequent number.

[BALT. ED.

THE AMERICAN JOURNAL OF MEDICAL SCIENCES,

No. XLVIII.—August, 1839.

To this publication, the literature of medicine is indebted for many of its richest and most valuable contributions. It has now been in existence twelve years, during which time it has sustained a reputation inferior to that of no similar publication. Besides having for its editor a man, distinguished alike for talents and professional skill, it numbers among its collaborators, many of the most eminent medical gentlemen of the country. Being thus sustained, it at once commends itself to the practitioners of medicine and surgery in all their various departments. We shall enrich our own pages with occasional extracts from it,—one of which—a "case of exostosis of the upper jaw," will be found in another part of this work.—BALT. ED.

DENTAL PRACTICE;

Or Observations on the qualifications of the Surgeon Dentist.—Dental Quackery.—Nature, and extent of the duties of Dentists in the first and second dentition.—The defective teeth of the present day compared with those of the last century, owing to empiricism.—Regulation and management of the teeth.—The present absurd and destructive practice of filing teeth.—Treatment of tooth-ache.—Extraction of teeth.—New extracting instruments invented by the author, illustrated by plates.—Third dentition.—Importance of artificial teeth.—Philosophical principles on which they are formed—and on the duty of Surgeon Dentists and Mechanical Dentists, each by themselves to unite in associations, for the purpose of abating dental quackery. By John Gray, *Surgeon Dentist, member of the Royal College of Surgeons in London.—London,* 1837.—*pp.* 54.

The work, of which the above is the title, was placed on our table a short time since by a professional friend; and were we to judge of its worth by the length of this title, our opinion of it could not be otherwise than exalted; but unfortunately the perusal of its pages has disposed us to regard it in a very different light. The object of the author in this publication seems to have been any thing rather than the promulgation of new or useful information on either the theory or practice of Dental Surgery.

The introduction, after stating that the author is a member of the Royal College of Surgeons in London,—that it has been his intention for a long time, to present to the profession the result of his own observations and experience, &c., is made up of a recapitulation of the title page. On the qualifications of the dentist and on dental quackery, there are some good observations; from the former, we quote the following:—" It is only when the accomplished mechanic has superadded the qualifications of the surgeon, that he may legitimately assume the whole range of the profession of a dentist with credit to himself and advantage to his patients."

Of the practical parts of the science, the author touches only upon a few, and here his directions are too brief and inexplicit to be of any service either to the general reader or practitioner.

On the instruments used for the extraction he professes to have made some valuable improvements. These consist in a few slight alterations in the old elevator and key instruments, by which, instead of making them any better, they are rendered more clumsy and awkward than they originally were.

The great misfortune with many of the writers on dentistry, in this mercenary age, seems to have been, that they have labored more for the advancement of their own fame, than for that of their art. Many of the works that have been published on this subject, during the last ten or fifteen years, seem rather to be intended as popular advertisements, than as disseminators of new or useful truths in this department of knowledge.

[BALT. ED.

BIBLIOGRAPHICAL.

The Maryland Medical and Surgical Journal, and official organ of the Medical department of the army and navy of the United States.

In a former number of our journal, we took occasion to notice the prospectus of the above work, and we are now happy to state, that the first number is fully equal to the high estimate we were pleased to place upon its character, in anticipation of its appearance. We were satisfied upon the announcement that was made of the gentlemen composing the editorial committee, that they would furnish the medical profession with a periodical every way worthy of encouragement, and we have not been disappointed.

The number before us opens with the address of the editors, in which their views and purposes are clearly expressed, and without that effort at display which is prominent in many of the publications of the day.

The memoir of the late Dr. Baker, speaks in high terms of that esteemed and talented gentleman; but of his worth and character, the half is not said. In the character of professor Baker, there was every thing to imitate; and long will his memory be cherished by the inhabitants of Baltimore.

Following the memoir, is a lecture on scarlatina, delivered by professor Baker about a year before his death, at the request of the Medico-Chirurgical Society of Baltimore. This is an able and interesting paper, and the editors have done well to insert it in the first number of their journal.

The use of the immovable apparatus in the treatment of fracture, though of recent adoption, is beginning to attract considerable attention. The number before us contains two interesting papers on this subject; one by professor Jameson, and one by A. F. Dulin, M. D., both of Baltimore.

Dr. G. C. M. Roberts, in his *Obstetric* Memoranda has given several curious and interesting cases of ossified placenta;—one, if we mistake not, unlike any on medical record. In this, it would seem that vital process of the fœtus from some unknown cause, was arrested, as we are told by Dr. R. about the forty-fifth day after conception, and in which state that, together with the secundines remained in utero until the expiration of nine months when it was expelled.

The article by Dr. T. H. Buckler of Baltimore, on the use of gold dust and iron filings as a galvanic antidote to corrosive sublimate and other poisonous compounds of mercury, will be read with interest, and may lead to valuable practical results. The author, in a note annexed to this article, passes a very deserved compliment on professor W. R. Fisher, long a resident of Baltimore. and who on account of continued ill health, was compelled to leave it. While professor of chemistry in the University of Maryland, he labored with the greatest assiduity, and his zeal in the cause of his profession had well nigh made a martyr of him in the "midst of his years." We would hope for this son of science, that he may find a more propitious clime, and that his wasted health may be renewed, so that he may yet win other laurels wherewith to crown his declining years.

[BALT. ED.

PIVOTING METHOD OF INSERTING ARTIFICIAL TEETH.

Our object in adverting to this subject, is merely to notice a plan proposed by Mr. L. S. Stringfellow, an ingenious and skilful practitioner, for giving egress to matter, whenever formed, within the root of a tooth on which an artificial crown has been placed, and by which the supervention of alveolar abscess may, in almost every instance be prevented. For this purpose, instead of cutting a groove on the side of the pivot, as recommended some years ago by Dr. L. S. Parmly, of New Orleans, he cuts it on the side of the tooth; and has invented an instrument by which it can be done with very great facility. This, together with several other ingeniously constructed instruments invented by Mr. S. for the excavation of carious portions of teeth, preparatory to filling, we may take occasion to describe in a future number of our Journal.—BALT. ED.

The following comes to us in the form of a circular, intended by Mr. Brewster to lie upon the table of his waiting room for the benefit of his patients; and as it is the kind of advice that not only all patients, but, if followed out, that all dentists would be benefitted by, and as we are well apprised of Mr. B's well earned reputation, we feel happy in inserting it, although it is done without his knowledge or permission.

A WORD OF ADVICE ON THE TEETH.

[BY C. S. BREWSTER,—PARIS, FRANCE.]

Incipient teeth may be extracted too soon or left too long; if they loosen themselves by the absorption of their fangs and allow the permanent to take their proper place, all will be well; but if the first teeth remain firm and the second on their appearance require room; do not delay to give them place by removing the adjoining of the first dentition. The permanent teeth must have sufficient room or irregularity and decay will ensue. At the age of five years, give your children tooth brushes and teach them to cleanse the mouth and teeth morning and evening, especially on going to bed. At that age, powder is not requisite but cleanliness is necessary at all ages. Food, fruit, etc., etc., left in the mouth and between the teeth during sleep are the principal causes of their decay. Give your own teeth the same attention, tooth-picks are indispensable for their preservation ;* let your brush be as hard and your water as cool as you can comfortably support. Twice or thrice a week, use dentrifice containing no deleterious substance ; carefully avoid powders and elixirs in which there is any acid ; suffer no acid, whether taken in food or drink, to remain in the mouth ; keep your teeth clean, content yourself with their natural colour. Any effort to give them an unnatural whiteness will injure them. Your dentist possesses your confidence or you will choose another, therefore go to him at least twice a year ; allow him to do what he thinks best ; pay him and don't stop to waste his time with long and useless relations of past calamities ; his time is precious, other persons who value their teeth as you value yours, are waiting their turn for his aid. Recollect that early and careful attention to your teeth, cleanliness of mouth, temperance in living and abstinence from acids, are the best maxims for the beauty and preservation of your teeth.

EXTRACTS

From professor BLANDIN'S "*Anatomie du Systime Dentaire,*"—
Translated from the French, with Notes,

[BY HARVY BURDELL, M. D.]

DEVELOPEMENT OF TEETH IN AGED PERSONS,—OR,

THIRD DENTITION.

Two dentitions on the the developement of the infant and adult teeth, are all that persons require in ordinary cases during life, and if it were not owing to the many deleterious agents often operating upon them, either directly or through the medium of the general organization, the permanent or adult teeth would undoubtedly remain in the mouth, healthy and unimpaired throughout the whole period of our existence. We also observe that two sets of teeth characterize the human species, and that any variations from these physical laws are extremely rare ; yet when cases of a third dental formation happen, we ought to consider such anomalies as sports of nature, and as indicative of the regenerative powers, she possesses although in this respect but seldom exercised. *

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* The only tooth-pick that is at once safe, convenient and effectual, is untwisted, or floss silk well waxed. This will pass readily between the teeth howsoever close soever they may be, which is not true of any other substance that can be obtained with equal convenience. It will moreover remove all impurities from between the teeth and under the gums, and keep the enamel highly polished if used with sufficient frequency and with proper care. Let any person try it, who doubts the propriety of this recommendation.—S. BROWN.

Joubert reported a case in which a lady of nobility lost all of her teeth, and at the age of seventy, twenty new teeth grew from her jaws.

Seunert records a similar case, in which a lady of Silesia of about the same age, had twenty teeth renewed, and the symptoms attending this dentition, he says, were similar to those attending the dentition of infants.

Eustachi saw a young man who lost his incisors at the age of twenty, and during the same year, four new teeth appeared in the spaces of the former.

Duffay, a celebrated physician of the East Indies, saw a man who had two incisors and two canines produced at the age of eighty.

Gehler witnessed a case in which an eye tooth had been renewed three times. Hunter relates a case of the appearance of teeth at the age of seventy years.† In a case which came under my own notice, I found in the jaw of an adult just below the first bicuspid, a new tooth, the crown of which had not yet perfectly formed. * * *

The views and opinions entertained by authors, relative to a third dentition, or of the re-production of teeth in old age, are at variance with each other. Some of them contend that the developement of teeth, late in life, is simply owing to the circumstance, that the first or second set had only been retarded, and consequently appeared at a more advanced age ; while others deny this to be the case, and offer different theories in proof of their doctrines. Among the writings of dental authors, there appears to be much exaggeration relative to the growth of a third set of teeth, and consequently, erroneous positions have been assumed. In the case witnessed by Gehler, for instance, was it possible for this tooth to

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* The late and much lamented Dr. John Mason Good, whose name is mentioned by learned men with the deepest veneration for his immortal memory, thus writes : "sometimes," says he, "though rarely, we meet with playful attempts on the part of nature to re-produce teeth at a very late period of life, and after the permanent teeth have been lost by accident or decay. This most commonly takes place between the sixty-third and the eighty-first years, or the interval which fills up the two grand climacteric years of the Greek Physiologists ; *at which period the constitution appears occasionally to make an effort to repair other defects than lost teeth.*" Many other learned physiologists coincide with the opinions of Dr. Good.—H. B.

† Only a single instance, in which the alveolar sockets were renewed, came under the notice of that celebrated surgeon, John Hunter.

Mr. E. Parmly, of this city, in his notes to Brown's Dentologia, records the case of an adult who never had had any teeth, yet the alveolar processes were developed so as to fill up the vacancy in the mouth, which would have manifested itself had the teeth been lost by disease or extracted.

Dr. D. Rosseter of this city, also met with a case in his own practice, similar to that mentioned by Mr. P. Dr. Rosseter states that the alveoli and gums were developed in this case so as to be used as teeth, the surfaces coming in contact during mastication, being sharp like the crowns of the teeth.—H. B.

have belonged to the second set, when it had been renewed three times ? On the contrary, is it probable that the rudiments of three teeth of the same class, could have been originally formed in the jaw, in opposition to what has already been said upon the subject ? * * *

Why have so many writers opposed the doctrine of a third dental production ? Is it not quite as difficult to enter upon a full and philosophical explanation of the more important anomalies met with in the general and comparative anatomy of man, and also of animals, than it is in those which happen in the developement of teeth ? Certainly ! without doubt ! * * *

The best authenticated cases upon record, are those in which only one or two teeth have been renewed.[*] Hunter says, that it sometimes happens, that a third set of teeth appear in the jaws of very old people ; but in reference to such instances, he very justly observes, that when teeth appear so late in life, they cause much inconvenience, and are more *hurtful* than *useful,* as they usually appear only in one jaw, and consequently, are apt to wound the gums of the other when coming in contact, and in such cases, it is necessary to extract them.

TO OUR PATRONS.

The present number completes half of the first Volume of this Journal, and the publishing committee, are compelled to solicit of all advertising friends, subscribers, agents, and special patrons to forward their dues to the Treasurer, Mr. Jahial Parmly, No. 3 Bond Street, New-York, without further delay.

The expenses of publication must be punctually met as the successive numbers issue from the press, and the committee confidently rely on the patrons of the work for the supply of the necessary means. The difficulty of transmitting funds from the remote sections of the country, the committee are aware, is very great, but to pay the printer without the necessary resources, is still more embarrassing.

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[*] I have witnessed one case of this kind, in my own practice. In this instance, the patient was aged about seventy years, and he called "to have the last tooth in his head extracted," as he remarked. He said it was very troublesome, but not in the least decayed. The tooth was very white, and appeared like an infant lateral incisor. I extracted it with slight effort, and on splitting through from the end of its root to the extremity of the crown, found it perfectly solid, there not being any nerve or canal in its centre.—H. B.

For the American Journal of Dental Science.

[BY ENOCH NOYES—DENTIST, BALT.]

MESSRS. EDITORS,—

On the receipt of the first number of your highly valuable and useful journal, I took the liberty of addressing to you a short communication, congratulating you, and the profession generally, on the appearance of a publication so much and so long needed. I looked upon it as the precursor of a better condition of the profession, as the dawning of a new and bright epoch in its history. Thus far my expectations have been fully realized.

I have been disappointed with but one thing, and that is the irregularity in which its numbers have been issued. I can very readily imagine, however, that in starting the work, you have had many difficulties to contend with. Scattered as the members of the profession are over this vast country, it could not reasonably be expected that a subscription could have been obtained at once sufficiently large to defray the expenses of such a publication. Added to this, the deranged condition of the currency of the country, that which is good in one section not being available in another, may, I can well conceive, have occasioned unavoidable delays on the part of subscribers, in remitting their subscriptions. I rejoice, however, to learn that your list is steadily increasing, and cannot allow myself to doubt, that by the time the first twelve numbers shall have been issued, you will have obtained subscribers enough to justify you in the continuance of its publication.

A periodical of this kind has certainly long been needed, and now that one has been started, I hope means sufficient to sustain it will be furnished by the profession. Its influence, in connexion with that of the college that has recently been established in Baltimore for the education of gentlemen for the practice of this particular department of surgery, cannot be otherwise than salutary both to the profession and community at large. The former will be elevated by them to a place in the estimation of the latter, much higher than any which it has ever before occupied. I may be over sanguine, but I cannot but indulge the hope that, should the *Journal* and *College* be sustained, and I should regret exceedingly to think otherwise than that they will, the time is not far distant when, at least, most of those who shall be entrusted with the exercise of the duties of dentistry, will be men of science, men competent to practice in a manner creditable to themselves and beneficially to those by whom they may be employed. That the reverse of this to a very considerable extent at present is the fact, however painful and mortifying the acknowledgment, cannot be disguised.

In my former communication, I took occasion to advert to a species of mal-practice in our profession; that is, the filling of teeth with amalgams of mercury (quicksilver) and tin, or silver, usually denominated by those who use them, "metallic paste," and by the celebrated European empyrics—the *Crawcours*, assuming the more imposing appellation of

" *Royal Mineral Succedaneum*," and I am happy to find that in condemning this pernicious article, I am sustained by every scientific and experienced practitioner whose views upon the subject I have been able to learn. I should not again have alluded to the subject, had not Mr. Clark, one of your correspondents, proposed several enquiries in relation to it. That I shall be able to remove the doubts which his enquiries would seem to imply is more than I dare anticipate, for he tells us that the " dictum of no man, though grey in his profession, will be deemed sufficient." The inference to be deduced from this, is, that he is actually ignorant and chooses not to be taught, or in other words, that he will receive the testimony of no man, however much respect it may be entitled to. Anticipating the " imputation of ignorance," he contents himself with the philosophical reflection that " many a man has died a fool because he would not seek for knowledge, lest he expose his ignorance."

However well informed Mr. C. may be on other subjects, it must be evident to every one who has seen many teeth that had been filled with the article here alluded to, that he is really ignorant of the effects produced by it. Believing this to be the fact, I will proceed to answer the interrogatories proposed by him, which, whether or not satisfactory to him, will, I trust, be so to others.

To the question—" How does it appear that combinations of mercury, when employed as above stated, (refering to its use in the filling of teeth,) are necessarily destructive to the teeth ?" The answer to this is anticipated in part by the next question. " Does the external surface of the filling corrode, vitiate the saliva, and thus act externally on these organs ?" Most assuredly, and besides, by the evaporation of the mercury, the size of the filling is so lessened that the secretions of the mouth are frequently admitted between it and the walls of the tooth, and which by being retained there, induce a more rapid decomposition of the surrounding bone, than they would if the filling were not there, for the oxidized particles of this substance which mixes with them, increases their corrosive properties ; at least this would seem to be the case, from the fact, that teeth, after being filled with this amalgam, often decay faster than they did before.

The answer to the last question supersedes those which might be given to the two or three following: I would observe, however, that the mercury may " find its way into the stomach" but cannot " act through its influence on the organ," (meaning the tooth that had been filled with it. The gums, however, may be, for many have been salivated by having teeth stopped with it; but that may have been attributable to its having been aken up by the absorbents of the mouth. It might, however, be produced in either way. I do not presume that it is ever taken up by the absorbents of the teeth, though I would not like to hazard the assertion that it was not. The solution of this question, however, is of no consequence to the point at issue. As it regards the *modus operandi*, that is a matter of no importance. The fact that bad effects do result from the use of the amalgam here alluded to, in filling teeth, ought to be sufficient to deter every dentist from employing it for that purpose. The answers however, which I have given to the interrogatories I believe to be correct, and in accordance with true philosophical principles.

There is one other question which it is proper to notice before dismissing the subject, and is thus propounded. " Whatever be the mode of injury, is it always speedily apparent, or is it slow, effecting imperceptibly, at first its destructive work ? And if the latter, about how long must we wait to have an experiment satisfactory ?" Much depends on the health of the mouth in other respects. In a healthy mouth, and where the cavity in the tooth is not very large, and has been previously well prepared, it may remain two or three years, before it becomes very apparent; but under opposite circumstances, it often manifests itself in two or three weeks. I extracted a tooth a few months since that had been filled with an amalgam of mercury and silver, about four or five weeks before, and the surface of the filling had become completely oxidized. I presented the tooth to the Baltimore editor of this journal, who can testify to the truth of the above statement, and who in a recent conversation informed me that he had extracted some fifteen or twenty teeth that had been filled with this article, and that he had removed this kind of filling from perhaps twice that number, and substituted gold in its place. He also stated that, ptyalism has been produced in several of the cases.

There is another fact noticed by the gentleman just refered to, in an editorial in the fourth number of the American Journal of Dental Science, and which ought forever to prevent the use of amalgams and alloys for filling teeth. It is that " metals when mixed have a much greater affinity for oxygen than when in a separate state." In another part of the same notice, he says, (refering to a comunication of his in a Baltimore paper, on the use of this amalgam for plugging teeth,) "we took occasion to advance the opinion that the rapid oxidation of the various '*metallic cements*' and '*pastes*' that are used for filling decayed teeth, was probably attributable to a galvanic action between the metals of which these '*amalgams*' are composed," and immediately goes on to add, "but whether this be true or not, the fact that they do oxidize, and that too very rapidly when placed in the mouth, should constitute an insuperable objection to their use." Now it is clear that it does oxidize, for the assertion made in the last part of this quotation, is evidently made from personal knowledge.

The New-York editor of the same journal, in a note to a supplementary treatise of Hunter, (and his opportunities for information on the subject have been abundant, and we may infer, therefore, that he speaks from knowledge,) thus alludes to the subject; " I regard " (says he) *cements*, (pastes,) fusible metals, amalgams, succedaneums, and all other substitutes for the above named metals," (gold, tin, or lead,) " as impositions on the public, never having seen a single operation, in which these substances were employed which would not have been more permanent if even lead, the poorest of the above named metals, had been used; because it is less subject to decomposition and oxidation, to say nothing of the poisonous qualities of the mercury which most of the others contain."

Pursuing the subject, the same gentleman adds,—" I have never known a perfect master of the art of stopping teeth, either to employ, or recommend the substances which I here condemn; and I believe the use of them is almost wholly confined to those persons who are unacquainted with this nice aud difficult art."

The sentiments of the two gentlemen from whom I have quoted, touching this "amalgam" are no less severe than just, and emanating from such respectable sources, are at once entitled to general credence.

If the arguments that are here given in reply to the enquiries proposed by Mr. C., are not based upon facts sufficiently strong to convince him that "amalgams" of mercury and tin, or silver, are improper articles to stop teeth with, it is because he is determined not to be convinced.

If the explanation of the "*modus operandi*" of the "amalgam" in question on the teeth and mouth be not altogether satisfactory to him, the fact that its use is productive of injury to them, is nevertheless undeniable, and in further confirmation of which, I will subjoin the following cases. The names of the individuals I withold, though if any one questions the correctness of the statements, he can, by calling on me, obtain them.

Mrs. B., of Baltimore, about twelve months since, had three large cavities in her lower molar teeth filled with this article. Four or five days after the operation, her gums around the teeth that had been stopped, became sore, and in a few days extended to all her other teeth in her lower jaw. She at the same time complained of a mercurial taste. The secretions of her mouth were so abundant that she was kept almost constantly spitting; and they were much vitiated and very viscid. She at first did not know what this was attributable to. Imagining, however, they had been caused by the fillings in her teeth, she had them removed, and was at once relieved.

I know of several other persons that were affected in precisely the same way, by having teeth filled with this "amalgam," but the statement of the above, will suffice on this point.

Mr. L., of the District of Columbia, some years ago, had several teeth filled with gold, and a few months since, had two filled with what the dentist called a "*metallic paste*," but which was nothing more than an amalgam of mercury and silver, or tin. The mercury, in some way or other, got in contact with the gold fillings, and by uniting with them, caused them in a few weeks to crumble away and come out.

One other case, and I am done. The wife of the Rev. Mr. W., then of Virginia, but now I believe, of this city, had several artificial teeth inserted in her mouth, on gold plate five years ago, made fast to the adjoining natural ones by means of clasps. One of the teeth to which one of these had been attached, decayed, and while on a visit to this city, she was advised by a friend, to apply to an amalgam devotee, who was then making a great noise in the newspapers, about what he called a "metallic paste," which he used for filling teeth, and from the wonderful virtues ascribed to it, by its *advertisement fame*, she was induced to call on him and have her tooth filled with this substance. The result was, the mercury of the "*paste*" got on the gold clasp, soon extended to the plate, and in a very short time, caused both to crumble to pieces.

Of the injurious results produced by the use of that despicable compound, the amalgam of mercury, hundreds of examples might be adduced, but enough has already been said to convince even the most skeptical; I therefore, take leave of the subject for the present.

THOUGHTS ON THE ABUSE OF DENTAL PRACTICE.

[BY JOHN C. McCABE.]

It is to be lamented, that in this age of scientific discovery, and philosophic research, in proportion to the improvements of the day, is the prevalence of imposture.

It is only necessary for valuable discoveries to be made, or new and popular theories to be broached, in order to the almost magical raising up of a host of miserable pretenders, whose chief merit is the *impudence* with which they assume the honors which properly and legitimately belong to others.

Could the celebrated Gall, or the renowned Spurzheim have imagined that the interesting science which they labored to establish, was destined to be peddled about like wooden nutmegs, or horn gun flints; and *character* retailed out at a dollar per head, they would possibly have confined their labours to some other mine of thought, were one more attractive, but less solid, might have pleased without exciting the cupidity of the charlatan.

No science has, perhaps, suffered as much from gross outrageous charlatanism, as dental surgery; at a period too, when its principles, as a science of a high order of surgery is acknowledged by the most intelligent of the medical faculty.

Indeed, it may, in some degree, be owing to the respectability which some of its distinguished professors have succeeded in establishing for it, that so many pretenders have gone forth into the dental field. Not satisfied with "*rooting* up the tares, but the wheat also;" or in other words, not content with removing carious and diseased teeth, but pulling *all* that come in the reach of their mallets, forceps and keys.

He who yesterday wielded the blacksmith's hammer with unaspiring content, to day puts forth a sign, bearing on it in great flaring letters, "SURGEON DENTIST;" and he who imagined at one time a tailor's shop board little less than the throne of the Cæsars, now turns up his *professional* nose at his "ninth proportion" of an old associate, and "thanks him, if he has occasion to address him, to please remember to call him Doctor."

This may to some wear the appearance of exaggeration, but the writer is acquainted with *facts* connected with the assumption of the practice by grossly ignorant men, which, if the result was not calculated to jeopardize life itself, would excite the risible faculties of the most imperturbably grave.

He remembers, some few years since, having been shown a letter from an ignorant fellow, who had formerly been a bar-keeper at a little inn, to a gentleman in this city: the individual had left here with a drove of horses, like Milton's Adam :—

> " The world before him, where to choose a place of rest,
> And Providence his guide."

Six months after he had left Richmond, the letter alluded to was written, —and as nearly as recollected, ran as follows, "*verbatim, &c.*"—

" Deer Sur

I take my pen in hand to Inform you of how I am duing. I have turned dentist and am making munney I have a mity nice office in this place, and keeps a Sulkey I am very fond of drawing teeth and meen to lurn how to make seehorse teeth. this is a better prefeshun than mayking Cocktales at hapence a glass. Yew must rite to meen at this place.

I reemayn your humble survant," &c.

Now this poor fellow gloried, he says, in *drawing teeth*, and I must confess, if he *drew* them with the same self-possession and confidence in his own abilities, with which he *drew* the *picture* of his success, he must have succeeded to a hair.

This, however, is one among many similar cases,—no doubt, and the reason perhaps, why some enter without sufficient preparation into the profession, is the prevailing opinion, that *mechanical* ingenuity is the *only* requisite to the making of a dentist.

No opinion can be more erroneous.—As well might it be said that the surgeon who trephines, sets joints, splices limbs, and performs the various duties of his appropriate branch of the profession, could learn his business in a carpenter's shop or a joiner's—and yet some physicians, as ignorant of the science of dental surgery as those spoken of, have been heard to say, and the impression is a general one, except with individuals who know to the contrary, that drawing a tooth is the *easiest* thing in the world—" *any body* can draw a tooth."

Impressions thus conveyed, persons take it for granted, that these are facts, and submit their mouths to the manipulations of the ignorant pretender with the same confidence in his ability which they would manifest towards the most scientific; and the teeth—those delicate organs—are operated upon by men who are as ignorant of their physiology and the anatomy of the parts, as the blindest heathen is of the existence of the great word of truth.

This is a crying evil, acting with two-fold prejudice—affecting the profession, by the disgrace which this wretched bungling sometimes attaches to it, and periling the lives of those who are simple enough to be imposed upon by their pretensions : and it is high time that the public and the profession should unite in devising means for the suppression of such impostures.

The Faculty of Baltimore have put the ball of reform in motion, and if sustained, will " reform it altogether ;" and it must afford the intelligent dentist infinite satisfaction to know that his profession, though disgraced by some of the worst specimens of humanity, numbers some of the most intellectual and scientific in the country. Let their efforts in the cause be sustained, *their publication supported*, and the reform so much needed will be brought about. These " poor practitioners" will have to turn their attention to some other *science*—hoeing corn, or planting potatoes and removing *stumps* of *trees*, while the *legitimate* professors of the art will receive that encouragement and support which their labors deserve.

It is necessary that there should be some *test* of qualification by bodies qualified and regularly appointed for the duty ; and if every state was to enact a law of this character, the profession would be protected against the assumptions of those pretenders in the cause, and its ranks thinned of many who in time past have availed themselves of the name and its benefits, and yet were ignorant of the first principles of the profession.

Lest it might be supposed that the writer designed *particularizing*, he begs leave, most positively to object to such a conclusion. All the dentists of his acquaintance, he is proud to say, are ornaments to the profession ; and the individual, whose classic letter is here introduced, has long since given up the making of *see horse* teeth and gone to *raising hogs*. That the evils here spoken of *do* exist, the profession will bear me out in asserting, and that they should be arrested, public opinion will not gainsay.

It may argue presumption in one so young, and so inexperienced in preparing " paper bullets o' the brain" to thus attack an error which older and worthier champions in the ranks, have passed by as unworthy of notice ; but as it is sometimes necessary for an employer to leave to his apprentice the task of removing the *rubbish*, so he wishes rather to be considered as acting, than as playing the censor where others have feared, or failed to rebuke the evil.

The following passage from Mr. Koecker's work, entitled " PRINCIPLES OF DENTAL SURGERY" published in London, A. D. 1826, is presented to our readers for the purpose of eliciting from some of our correspondents, an article on the same subject, invalidating or confirming the doctrines therein advanced. The subject is an important one, and the younger members of the profession will, no doubt, be thankful for all the light that experience or observation can supply.

THE AUTHOR'S METHOD

Of treating the Lining Membrane of the Tooth when exposed.

I require for this the following apparatus : 1. A small iron wire, fastened to an ivory handle. The extremity of this wire I file to the size of the exposed surface of the nerve, and bend the wire in such a direction as to enable me to touch the exposed part of the membrane, without touching any other part of the tooth or the mouth. 2. A thick tallow candle, with a large wick.

I direct the patient to discharge all the saliva he may have in his mouth, and then to incline his head backwards against the head support of my operating chair. I put the candle into his left hand, and direct him to hold it in such a position that the flame of it may be on a level with his mouth, and about eight inches from it; I now place myself on the right side of the patient, and, holding his lips sufficiently open with my left hand, to prevent the instrument from touching them, I again dry the cavity as perfectly as possible with a lock of cotton fastended to the point of the cauterizing wire. Having effected this, I throw away the cotton from the extremity of the wire, and make it red hot in the flame of the candle. With the wire thus heated, I touch the exposed part very rapidly, so that its surface contracts, without, however, suffering it to penetrate deeply into the nerve, or to touch any part of the bony structure; as this would inevitably bring on suppuration and destruction of the whole lining membrane. The bleeding spot must be touched very quickly with the hot wire, which is sometimes necessary to be repeated two or three times before the parts are sufficiently contracted. The wire should be perfectly red hot, for in this state the cautery acts suddenly, and almost entirely without pain; but when heated to any temperature short of that of red heat, much pain and inflammation are generally produced. This operation is, indeed, so slightly painful, that I have been solicited by my patients to repeat it, although they had required much persuasion to induce them in the first instance to suffer its application. It, however, must be performed very adroitly, and without any loss of time. To prevent the flow of saliva to interfere, the patient must be desired not to close his lips, but to keep his mouth wide open, until the whole of the operation is finished, which he is capable to do for a certain time only.

When the hæmorrhage has been arrested in this way, and an artificial cicatrix formed, I wash the cavity, as before the cauterization, with warm water. I carefully remove every particle of the ashes or matter that may have been left by the cauterization, taking great care not to wound the membrane again.

The nerve, which, before cauterization, had a fleshy appearance, is, after this operation, like a black point. I take care not to disturb this point, for if the black scar be removed, a new wound will be formed and bleeding again will ensue; but I leave the future healing altogether to nature, and only caution my patient against using such things as might interfere with its salutary operations.

Having thus far removed all possible cause of future disease and irritation, in order to prevent any unnecessary exposure of the nerve, by which inflammation and destruction of it might be produced, I now terminate the operation by fulfilling the third indication, that is, to protect the nerve against injurious impressions from without, by filling up the cavity of the tooth with metal. Having again perfectly dried the cavity, I now take a small plate of very thin lead leaf, and lay it upon the exposed nerve, and on the immediately surrounding bony parts. I next carefully fill up the whole cavity with gold. The dressing of the cavity and the firm insertion of the two different metals also, must be completed before the patient can be allowed to close his mouth, which is not unfrequently very difficult.

THE AMERICAN JOURNAL
OF
DENTAL SCIENCE.

Vol. I—No. VII.

AN INVESTIGATION

On the Nature, Growth, and Formation of the Human Teeth, with an Explanation of the Causes of their Decay; particularly of its uncommon prevalence in the middle and northern states of America.

(From the Medical Repository, for 1813.)

[BY HORACE H. HAYDEN, ESQ. OF BALTIMORE.]

Sir,—

During the short interview I had with you in this city, I mentioned to you that I had noticed a substance entering into the composition of human teeth, and those of animals, situated between the enamel and bone: and apparently differing in substance from either; that in the case in which I first discovered it, (which was a very large human tooth, that had gone in the most rapid manner to decay;) the appearance of this substance was similar to that of the membrane which lines the shell of an egg. I also requested of you, some information as to the most probable means by which to separate those substances, the enamel and bone, leaving the intermediate one entire.

Since which, I have tried various experiments with acids and alkalies without effect. Still, however, unwilling to give up the pursuit, I adopted a different plan, by which, in the course of the winter past, I have happily succeeded in my efforts, and by which I am enabled to present you with a beautiful display of the manner in which the enamel is united to the bone, and also of the substance itself which constitutes this union.

This I have been able to accomplish by the following method : having observed that this substance was in a degree elastic, I had reason to believe that it was more vascular than bone, and therefore susceptible of absorbing more fluid, consequently, capable of greater expansion ; and therefore, when exposed suddenly to violent heat, liable (like wet parchment) to sudden contraction, which must inevitably break up its attachment to the bone.

Under this impression, I subjected a quantity of pieces of the tooth of the Hippopotamus, and also the teeth of several animals to maceration in water, until they were completely charged through the whole substance. I then prepared a violent heat in a stove grate, and suddenly exposed the several pieces of various sizes, to its operation while still wet. The effect was such as gratified my most sanguine expectations. The violent heat conveyed from, or through the enamel to this intermediate substance, occasioned a sudden contraction, which broke up its adhesion to the bone, and in many instances to the enamel also, which affords a complete display of the intermediate substance entire, and separate from either enamel or bone, of which I have pieces of various sizes. This experiment must be well timed to insure a favourable result, on handsome specimens, particularly on human teeth, those of cows, &c.

Hence, I am happy in having it in my power, to submit to your examination, specimens of various forms and dimensions of all three, viz: the enamel with the intermediate substance attached to it, the intermediate substance alone entire, and also attached to the bone, which I flatter myself will be sufficient to put the matter beyond the possibility of doubt, as to the correctness of my opinion on this subject. It may be asked, of what service is this fact apparently so unimportant ? Or what purpose is answered by it ? I shall not, at present, attempt to detail at large, the advantages which I am inclined to think it affords ; but this much I will venture to advance, viz. by it, we advance one step further in the true knowledge of the mysterious operations of some of nature's works ; and thereby are enabled to embellish with genuine truth the interesting pages of *Natural History.*

From the diversity of opinions, advanced by different authors, on the structure and formation of teeth, some of which are ingenious, others much less so, yet supporting an equal claim to correctness and truth, I have been induced to offer some remarks on this head.

This I the more readily perform, since they are the result of my own observations, and actual experiments. Therefore feeling a consciousness of their correctness, I shall cheerfully submit them to your perusal, and candid decision.

To Dr. Mitchill, &c.

Until within the last century, little notice seems to have been taken of the subject, as it relates more particularly to the teeth of the human species, but since the commencement of which, numbers have been engaged in an inquiry into the subject with a degree of zeal and success that has nearly kept pace with the improvements in the other branches of relative science.

Among those, various have been the opinions advanced on the subject generally; but as it respects the formation of the human teeth, and those of some of the inferior order of creation, I know of no one that has carried his researches further than Dr. Blake of Edinburgh.

But with what degree of accuracy he has applied his remarks in the course of his inquires I shall not, in the present instance, take upon myself to declare. But since some of the opinions he has advanced in his publication of 1798, and 1801, (printed at Dublin,) are irreconcileable to my ideas, particularly those which relate to the formation of the enamel of the teeth, and that he terms the Crusta Petrosa, I shall take the liberty of offering some remarks, not however with a view of refuting his opinions; but to state what appears, at least to me, to be more consistent with probability; and thereby, if possible, rendering the subject less questionable.

In treating of the human teeth, and particularly of the sacs, or membranes that surround the pulps, he observes, "the internal part of these sacs, soon after the commencement of the bony shells, deposits on their points and sides a soft earthy matter, moistened with a mucilaginous fluid; a small quantity of which is found between the membranes and shells." Further, " It may be proper to remark that it is *this soft earthy matter* which afterwards becomes the *cortex striatus*," or enamel.

That this beautiful provision of the membranes, is made to accompany the pulps of the teeth, no doubt can be entertained; but, that nature should have recourse to this mode of economy in order to perfect her works, seems to me to be inconsistent with her general plan.

That the periosteum, or membrane, constitutes the medium through which bone is deposited and formed, is an opinion long since advanced, and I believe, long since refuted.

That all the membranes in the human system are formed by the same means, and from the same source is very certain; that they receive branches from the same arteries, veins, and nerves as the other parts of the system, and are supported by the same living principle, is equally as conclusive. Hence, if bone is formed by a membrane in one instance, we may reasonably infer that it is in every instance deposited and formed by the membranes or periosteum.

We know that the chick within the egg, is likewise enveloped in a beautiful membrane, immediately within the shell; but we have little reason to suppose that the membrane has any agency in depositing the bone cellular substance, and much less, the feathers which differ as much in consistence from the general mass of the chick, as the enamel does from the bone of a tooth.

In conformity with this principle, we might expect, that the external table of the cranium is deposited by the pericranium; and, since the principle of action is simultaneous throughout the membrane, that ossification, instead of commencing at several points, would manifest itself at the same time, and at every point throughout the whole internal surface of the membrane, and progress with equal uniformity, until the external table is in a degree perfected, after which, the dura mater ought to take upon itself the same office to perfect the internal table; but this, I believe, is not the case.

There are numerous instances in the wide range of nature which can be adduced, that will operate with equal, if not greater force, against the doctrine, that bone is deposited from, or by, either the periosteum, or membranes; since which, much less am I inclined to believe that the enamel, or, cortex striatus, is deposited by any particular membrane under any degree of action, or modification, to which they are naturally liable.

We are not to conclude, because the enamel differs in texture and consistence from the bone of a tooth that a membrane, subject to any peculiar change of action is necessary, to deposit and perfect the enamel; or in fact any other substance, which may be naturally appended to men or animals differing, in like manner, in its character.

Can we suppose that a membrane is necessary to deposit, and perfect the lofty anthers of the stag ! or the horn-like teeth, which sometimes twenty or more in number enter into, or rather grow from that appendage which characterizes the saw fish ? or, those curious appendages attached to the tail of a rattle snake ? or, the whale-bone-like tuft, growing from the breast of a male turkey ? Can it be even supposed that the beautiful convolutions of the turbinated bones of the cow, horse, &c. which resembles a spiral roll of rich Brussel's lace, is deposited by a membrane ? I presume not.

But this mode of reasoning only serves to shew, that I do not rightly understand, or comprehend the subject; therefore, I will proceed to notice some futher observations contained in his ingenious essay.

In the formation of the teeth of different animals, Dr Blake seems to have discovered the same prevailing economy to exist, as it respects the formation of, or disposition of the enamel, or cortex striatus, by a membrane; and also some other modifications, and other operations that prevail during the growth of teeth, not hitherto so particularly noticed, and illustrated; but, which at the same time, seem to be by no means free from exceptions.

In describing the formation of the grinders of a fœtus-calf of three months old, he observes, "the membranes which are intimately connected with, or *derived from* the *internal* part of the *gum*, can be easily separated into two lamellæ, the external of which is very vascular, though I could not trace a single blood vessel entering into the internal one. These membranes surround the pulp; and duplicatures of them pass down between the internal divisions of it, exactly similar to the passing of the pia mater between the convolutions of the brain.

"As soon as the bony shells are perceptible, the internal part of the membrane secretes and deposits on their points, and progressively on their sides a soft earthy matter, similar to moistened chalk, and is itself moistened with a mucilaginous fluid, a great quantity of which is found between the membrane and shell." This soft earthy matter gradually assumes the crystalline appearance of the cortex striatus.

With regard to the membranes being connected with, or derived from the internal part of the gum; and which, is also the case with the membranes of the human teeth, agreeably to Dr. Blake's observations, it seems needless to offer any comments; since he is so candid as to make the following acknowledgment:—

"Having repeatedly inspected and examined the jaws of young subjects, I observed blood vessels passing from the gum to the membranes, destined to form the *cortex striatus.* It was natural enough then to conclude, that as the investing membranes were derived from the gums, their nourishment too did originate from the same source, and that the use of the vessels which entered the proper foramina of the jaws, was only to form the pulp and bony part of the tooth.

"Futher considerations of the subject, however, urged me to *relinquish this opinion;* it would by *no means hold good* on comparing it with what takes place in the jaws of large animals."

But with respect to the duplicatures of the membranes which surround the pulp, being sent down to form the cortex striatus around those conical processes which are discoverable in the grinders of the cow or ox, the sheep, deer, camel, &c. I must confess myself, not unwilling, but unable to reconcile it to my present opinions and views, of the formation of the teeth of man, and animals.

Dr Blake has certainly treated this part of the subject, as it relates to both, with a degree of ingenuity that does not fall to the lot of every one. But, however far I may have fallen short of it, I must beg leave to examine the last mentioned circumstance, on the principles he has alleged and supported.

We are led to believe, that the first point, or points of ossification upon all teeth, as far as we are acquainted, is on the tops of the pulps; and that it progresses towards the termination and completion of the roots or fangs, and that, as ossification progresses, a substance is discoverable on the surface of the body, or crowns of the tooth, which, as Dr. Blake correctly observes, resembles moistened chalk, and which in this state may be easily scraped off with the finger nail. This soft earthy matter gradually assumes the crystalline appearance of the cortex striatus, and without doubt, is what forms the ground work or basis of the enamel.

But the question is, whether this chalky substance, or the real cortex striatus, is deposited and formed by the internal membrane.

Dr. Blake observes, page 81, that, "as soon as the *bony shells* are *perceptible,* the internal part of the membrane secretes and deposits on their points, and progressively on their sides, a soft earthy matter similar to moistened chalk, &c. The cortex striatus is *first perfected* or crystallized on the *cutting edges* or *protuberances* of the tooth, and proceeds gradually from thence to the neck, when it terminates; and in *proportion* as the first part of the cortex striatus is crystallized, *that portion* of the *membrane* which formed it, becomes thinner, less *vascular ;* and at length, having performed the particular function for which it was destined, is totally wasted or absorbed; *part* of the membrane still remains on the body of the tooth, this however, is wasted as the cortex striatus covered by it attains to perfection."

In the first instance, as it relates to the formation of the enamel, or cortex striatus of the human teeth, I would ask if it is probable, or even possible, that this internal membrane could perform its functions duly in depositing the enamel of a tooth, after that part which forms the apex of this little capsule is wasted and obliterated? What is its situation? It is within the external membrane not adhering to, but loosely surrounding the body of the tooth, and within which is contained a mucilaginous fluid. And what are its connexions? It adheres firmly to the neck of the tooth, and is slightly connected with the external membrane, but contains no blood-vessels capable of carrying red blood; at least I could not discover any, although assisted by a very subtle injection.*

This being the case, is not the medium of circulation in the membrane in a degree deranged by a part of it being wasted? If so, by what is the remaining part of the membrane nourished so as to perform its office in perfecting the enamel, since it adheres only to the neck of the tooth, and slightly to the internal membrane? It cannot derive it from the bone of the tooth, to which it adheres, or is attached; and it appears improbable that it derives it from the external membrane since it is destined, as will appear hereafter, to deposit and form a very different substance agreeable to Dr. Blake's opinion.

In the next place, if the same order is observed, in the formation of the teeth of various animals, viz. the cow, sheep, deer, camel, &c. as to the commencement of ossification at the tops of the pulps, and that as the bony shells are perceptible, the internal part of the membrane secretes and deposits, what afterwards becomes the cortex striatus, and that, as it is formed, the membrane is gradually wasted, how, or in what manner is the enamel, or cortex striatus perfected round those conical processes which are seen in the grinders of those animals, and which sometimes extend down almost to the bifurcation of their roots?†

If ossification commences at the top of the pulp, and if, as it progresses, the enamel is deposited, and as it is perfected the membrane is wasted, is not the continuity of the duplicatures interrupted and cut off? It may be said not; for the duplicatures of the external membrane descend with it, forming a kind of hollow inverted cone, and that this is sufficient to support it, until the office of the internal one is perfected. In fact, we are left to believe, or at least to suppose, that the offices of the pulp, and surrounding membranes are performed in regular succession to each other, and that the action of the membrane is suspended until the tooth is nearly completed; for Dr. Blake observes (page 81) that "the duplicatures extend downwards, until checked by the junction of the internal *plates* of the *shells* which thus separate them from the pulps."

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* At page 81, Dr. B. observes, "I could not trace a single blood-vessel entering into the internal one."

† Those processes in the superior grinders of the horse, extend down sometimes three inches: but others quite to the bifurcation of the roots.

From the use of the terms "plates of the shells," we may conclude, that by it, is meant bony plates. In this case, as those conical processes extend down nearly two thirds of the body of the grinders of the cow, horse, &c. we may infer that ossification has progressed thus far before the internal duplicature begins to deposit the enamel.

But this appears to me to be inconsistent not only with the general economy of the teeth, but with his own principle or theory.

But, in reverting to the subject, we have reason to believe that the continuity of the internal duplication is intercepted, and its action destroyed, from the following circumstance. Dr. Blake observes (page 82) " that the protuberances of the tooth first appear, and thus *intercept part* of the *nourishment* from the duplicatures of the membrane which passed down into the internal cavities."

When the tooth rises somewhat higher *all nourishment* is cut off from the internal duplicature of the membrane which is then found *dead* and of a *darkish purple colour*. Can it be admitted, if the enamel is deposited by the membrane, that it can be duly perfected when the membrane is at first partially destroyed and gradually progressing towards a total wasting away ?

We are further led to a conclusion that the circulation and action in both the internal and external membranes are cut off from the following :—

Dr. Blake observes, (page 82) that " it appears that the internal part of the membrane secretes the earthy matter of the cortex striatus, and that as soon as it has performed its function it is wasted or destroyed; for its external lamella, as soon as the *upper part* of the cortex striatus is crystallized, begins to deposit on its surface a substance differing from *either* the *bony part* or the cortex striatus, being harder and more brittle than the former, and less so than the latter;" this substance, for " distinction's sake," Dr. Blake calls the " crusta petrosa."

There is every reason to believe, that a certain degree of uniformity prevails in the action of the vessels that deposit the bone of the tooth, the enamel, or cortex striatus, and the crusta petrosa; and that when ossification is begun on the pulps, the points or shells unite, and the other substances are in due order deposited, until the top of the crown of the tooth is completed in its form.

Hence it must be admitted, that the upper part or orifice of those conical processes, when the duplicatures are sent off, are in most instances filled up by the crusta petrosa, before the tooth is formed down to the termination of those processes, or at least, to the bifurcation of the roots; consequently, the duplicatures, or membranes, must be intercepted.

Of this, we have what I consider the most unequivocal proof, in examining the grinders of the animals before mentioned. It appears obvious, that nature often varies in her operations, so much so, as to lead us to form conclusions directly opposed to each other in examining different subjects of the same class and order.*

Hence there remains no doubt, but that the subject of Dr. Blake's observations, and from which he drew his conclusions, were such as to authorize him in a degree to advance the following opinion on this head.

" In some few instances, the grinders remain sufficiently long under the gum, so as to allow the cavities in which the membranes passed down, to form the cortex striatus to be *nearly* filled with the crusta petrosa. In most cases, however, these cavities are filled entirely with the matter of the food, by the broken particles of the teeth, whilst grinding, or by sand, clay, &c."

In examining the grinders of the animals before mentioned, of different ages, we see numerous instances, such as described by Dr. Blake; but their number, as far as my observation has extended, falls far short of those which are, on the contrary, completely closed up with bone or crusta petrosa.

Hence, I am induced to believe that the duplicatures of those membranes passing down into the bodies of these teeth, to form the conical processes, are in most instances interrupted, and the nourishment cut off by the process of ossification being completed at the top of the tooth first; thereby leaving the lower, and greatest part of these processes an entire void, or destitute of the crusta petrosa; for, in making a longitudinal section, that shall intersect the conical processes of the grinders of either the cow, horse, &c. we find, in three cases out of five, if the animal is young, the upper part of the process filled with bone or crusta petrosa as it descends, it has less the appearance of bone; thus it gradually assumes the appearance of pure phosphate of lime, wanting the gelatine to give it consistence; from thence it assumes a brownish, then a purple colour, and terminates in many instances, in a dark or blackish substance resembling dried blood, which no doubt, (particularly in the grinders of the cow, or ox) appears to have more the consistence of bone, possessing more of the gelatine or gluten than lime, all of which I shall endeavour to account for hereafter.

That these conical processes are completely filled up at the top of the teeth, and consequently the nourishment of the duplicatures intercepted, leaving the remainder of the processes hollow below, will appear evident from the following.

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* Cuvier observes, in his treatise on the horned rhinoceros, that "to obtain a complete knowledge of the teeth of herbivorous animals, it is not enough, to have seen them at one period of life, as these teeth are continually wearing down; the figure of their crown is also in a continual state of change; and the naturalist must follow them from the moment when they pierce the gum, to that when they fall out of the mouth.

In describing the process of ossification in the grinders of the elephant, and pointing out the different appearances which are manifested in the duplicatures that are sent off to form the cortex striatus and crusta petrosa, Dr. Blake observes: "This beautiful contrivance was necessary, otherwise, as the processes of the pulpa elongata, and the bony shells extend downwards on them *many inches previous* to the *junction* of their edges, the upper part of the cavity or *interstice between them* would be filled by the crusta petrosa, whilst the lower part of it would be empty, *which sometimes*, though seldom, happens in the upper grinders of the horse."

On examining the grinders of those animals, at least the cow and horse, at the period when their grinders are formed and nearly all appear through the gums, I have found in most instances as far as my observations have extended, that the processes were filled up, and the teeth completely formed. In other instances where the animal was more advanced in age, and where the grinders were abraded, or worn down by mastication, those hollow processes were just making their appearance. And again in other instances, when still more advanced in age, the grinders are so far worn down as to expose the remainder of those processes completely hollow, and (in which Dr. Blake is perfectly correct) filled with extraneous matter.

Of such, I am inclined to believe he drew his conclusions; and in fact there are instances even in young animals, which if examined separately would strictly justify his opinion on this point; for I have seen in examining the grinders of the horse, the fifth molaris from the anterior one in the superior jaw with its conical processes entirely open at the grinding surface, but nearly filled with extraneous matter; in like manner was the corresponding one on the opposite side of the jaw, while the four anterior grinders, and the sixth or posterior one were entirely filled up with bone; and (being a little worn down) presenting surfaces with all the beautiful convolutions of the external plates of the cortex striatus, and also the internal plates surrounding the conical processes, which might have, when considered in relation to the grinders of the opposite jaw, suggested, certainly no inappropriate idea of the manner in which the grinding surfaces of a pair of mill-stones ought to be pecked in order to perform their office duly.

Cases of the last mentioned description I consider as coming under that class which Dr. Blake has described, in which ossification has progressed more rapidly, perhaps, than at any preceding, or subsequent period, during the dentition of the animal; in consequence of which, the tooth, or teeth, were forced out through the gum, and the nourishment cut off from the duplicatures that deposit the bone, or crusta petrosa in the internal processes before it had sufficient time to deposit it, except at the top of the tooth which was quickly worn down, leaving the cavity to be filled with extraneous matter as before.

Instances of this kind, in which ossification seems to progress more rapidly than at other times is often manifested in the economy of the teeth. Not only so, but we see it in other instances of the animal economy; but in none, however, more evidently than in infants, where, in some cases, the bregma is closed up in eighteen months, or less; in others, it remains open for three years, or more; a circumstance which in my opinion affords room for some very important and useful deductions relative to the action of the vessels in depositing ossific matter under particular circumstances. But this is wandering from the subject.

Having cursorily noticed the opinions advanced by Dr. Blake relative to the formation of the enamel, or cortex striatus, and crusta petrosa, by membranes which surround the pulps of the teeth of man, and animals, duplicatures of which are sent down to form the conical processes in the teeth of the latter: I must beg leave, in the next place, to examine in a similar manner the grinders of the elephant.

Not having had the pleasure of seeing a dissection of one of those monstrous animals, nor of an opportunity of injecting the pulps of any of their formidable teeth; in whatever instance I may fail for want of ocular demonstration, I must pattern from *example* and resort to conjecture to supply the deficiency. In describing the strucure and formation of the grinders of the elephant, Dr. Blake *seems* to have discovered the same mode of economy prevailing as to the formation of the cortex striatus and crusta petrosa as that which is manifested in most other graminivorous animals, with the exception of some small deviation, for he observes:—

"I mentioned to Mr. Corse, in Edinburgh, that the pulp of an elephant's grinder was divided into a number of conical processes, and that duplicatures of the investing membranes passed down between these processes to form the cortex striatus. That ossification *commenced* on the *highest point* or *points* of these processes, and formed conical bony shells on them which extended *downwards* for *many inches previous* to the *junction of their sides.*"

From the exact representation of a section of the elephant's grinder which Dr. Blake has given us, and from an examination of a very large and beautiful grinder which I have in my own possession, there is every reason to believe that he is so far mostly correct. But how, or why he should so soon throw himself off his guard, and immediately advance an opinion, which if not contradictory, is so fully calculated to render the above opinion doubtful, is to me a circumstance not a little surprising. For he observes "that as soon as the bony shells were perceptible, the internal lamella of the investing membrane began to deposit the soft earthy matter of the cortex striatus on their external and *upper* surface, and that *as soon* as it was *crystallized* on the *upper part* of the *shells*, the investing membrane assumed a *different mode of action* and *began* to *deposit* the crusta petrosa on *their points* and *sides*, in order to fill up their interstices or spaces between the shells where the membranes passed down to form the cortex striatus, in a similar manner to those of the horse.

Now if those conical bony shells extend down several inches *previous* to the *junction of their sides*, which is a fact no one can doubt that has seen them; if, as soon as ossification had commenced, and the bony shells or tops of those processes were perceptible, the earthy matter of the cortex striatus was deposited on them; and that as soon as it was crystallized, the external or investing membrane begins to deposit the crusta petrosa; is it possible, or can we even suppose, that these conical processes, which are in some cases six inches in length, would have remained separate from each other in their whole length? If this investing membrane assumes its action, and deposits the crusta pretrosa so soon after the commencement of ossification, and also the crystallization of the enamel, or cortex striatus, would it not probably fill the space of one quarter or three-eighths of an inch in thickness (which is the greatest distance I have ever seen between those processes, at least at the grinding surface) with bony matter, or crusta pretrosa, as soon as four or five inches of bone is formed in length downwards, consequently unite those processes at their tops, probably before they were formed half their length downwards? Yet we see it is not the case, but on the contrary they are formed, and remain separate from the top almost, or quite down to where the sides of the shells and cortex striatus unite, and where the formation of the roots of the grinder commence.

In support of this, we have not only the representation of a section of a growing elephant's grinder which Mr. Corse politely presented to Dr. Blake, of which the two posterior processes are at least represented entirely separate from each other, and from the main body of the grinder: but we have also the opinion of Dr. Patrick Blair,* (as quoted by Dr. Blake) who observes, "several of which rudiments he observed lying stratum superstratum, or placed perpendicularly across the saw; they were two or three times intersected by membranes, whereby they could be disjoined; but after he had taken out several of those rudiments or processes, he observed no more such separations. Where the ligaments or membranes cease, they become extremely solid and ponderous."

Having cursorily noticed *some* of the exceptionable parts of Dr. Blake's theory, I shall in the next place, and in as brief a manner as is consistent with the nature of the subject, proceed to explain to you my own ideas on this head; taking the liberty at the same time, of pointing out to you some important relations which present themselves as analogous and highly interesting.

I have demonstrated to you, as well as a number of respectable scientific characters, the existence of a substance entering the composition of teeth, differing apparently in consistence from the other substances, (viz.) enamel and bone, which constitutes the medium of union between those two substances. I feel myself justified in rejecting most of the opinions hitherto advanced, on the formation of the enamel of teeth, and particularly that which supposes it to be deposited and formed by a membrane.

Mr. Home (in treating of the pulps of teeth, page 4,) says: "This pulp is enclosed by a capsule, the cavity of which, while the tooth is growing, is filled with a viscid fluid similar to the synovia of joints, and this fluid, by the absorption of the thinner parts becomes inspissated to a proper state for crystallization, so as to form the enamel which adheres to the surface of the tooth. Dr. Blake observes, 'I shall just ask Mr. Home what deposits other mucilaginous fluid?—I answer for him, the investing membrane.' "

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* Who dissected an elephant that died at Dundee, in Scotland.

With due submission I beg leave to ask either or both of these gentlemen, what it is that deposits the *semi osseous strata* between the enamel and bone of the tooth?

I shall not be so positive in saying, at least that it is deposited by *any* membrane, since there must necessarily be a third, and no such has been discovered.

Therefore, the whole must rest upon mere conjecture. But were I to cherish a belief, that nature has formed a membrane in the whole animal economy destitute of blood vessels, and capable of depositing and forming the enamel, cortex striatus, I should remain in ceaseless anxiety lest the crystalline lens of my eyes should become a mass, similar in substance to the enamel of a tooth; or, that some of the membranes of the eye (which are doubtless subject to the same laws of action as other membranes) should deposit a like substance, which would ever after deprive me of the indescribable pleasure of contemplating the beauty of her inimitable works.

Dr. Hunter seems to be of the opinion that the enamel of a tooth, is the earth more fully depurated or strained off from the common juices.

This conjecture seems to be by far the most plausible, and one that is strongly supported by the following consideration, whether he had it in view or not.

It appears from a strict analysis of both the bone, and enamel of the teeth, that they contain both phosphate and carbonate of lime; though in different proportions.

Mr. Hatchetz says: "The enamel appears, only to be different from tooth or bone, by being destitue of cartilages, and by being principally formed of phosphate of lime cemented by gluten."

Now as there is no instance, as yet ascertained, in which those substances are known to be deposited by a membrane, destitute of blood-vessels, and that on the contrary they are both deposited by the blood-vessels (as will be made to appear hereafter) it follows, since the internal membrane surrounding the pulp contained no vessels capable of carrying red blood, that the opinion of Dr. Blake remains very doubtful, while that of Dr. Hunter appears, not only possible, but very probable. That the enamel is the real production of the tooth, or rather, that it is secreted or deposited by it, appears probable from the following circumstance.

The texture of the osseous part of the tooth of the hippopotamus is much finer than the tusk of an elephant,* yet much coarser than that of the tooth of the common horse, and still more so, than that of the cow or ox, buffaloe, &c.—The enamel differs in like manner.—That upon the tusk of the hippopotamus is perhaps the coarsest in its texture of any, at least that I know of; that on the tusk of the horse approaches nearest to it, except that on the grinder of the elephant.—The osseous part of the teeth of the buffaloe, cow and dog, resembles, in its texture, that of the human teeth, in the strictest sense, and so likewise is the enamel.—There is not a human tooth in nature which presents a finer and more beautiful enamel than is found on the cutting teeth of either of the last mentioned animals; hence, the beauty and texture of the enamel seems to depend on the texture of the bone which it covers. Whereas, if the synovial fluid of Dr. Home, and which, according to Dr. Blake, serves to moisten the chalky substance, which afterwards becomes the enamel, is secreted from the membrane, we have much reason to believe, that this substance upon all teeth would be alike in beauty and fineness; on the contrary, it differs very materially.

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* I do not mean to infer that the tusk of an elephant has enamel upon it.

It may be said, that the larger the animal, the grosser the membranes and vessels, and therefore the coarser the enamel; but the sheep and the hog are much smaller animals than the cow; yet the enamel on the teeth of the former is much inferior to that on the teeth of the latter. As to the bone of the tooth serving as a foil, it is out of the question; for the bony part of the tusk of the hippopotamus is whiter than either, while the enamel is still the coarsest. In the next place, if the enamel was deposited by the internal membrane, upon the bony substance of the tooth, it would, after being perfected, be liable at all times to scale off through a deficiency of the uniting medium.

This will appear evident when we consider the formation of the crusta pretrosa.

This bony substance of the tooth is first formed at the top. As ossification progresses, the enamel is formed, and as it is perfected, the crusta petrosa is deposited; but *no union* of those two last substances ever takes place, except such as is formed by the inequalities of the crusta petrosa impressing itself in the most minute manner when soft, into the inequalities of the surface of the enamel. Now if the enamel was, or is, deposited by the membrane upon the bone of the tooth, and by a membrane also, the crusta petrosa is deposited upon the enamel, we have every reason to believe that the union of the crusta to the enamel, would be as intimate as that of the enamel to the tooth.

On the contrary, as I before observed, it is never the case; the crusta petrosa will in all cases flake off from the enamel, leaving it entire and beautifully white—whereas, the enamel is so intimately united to the tooth that it cannot be separated by any violence (except by the method I have adopted) without splitting up the bone also.

Lastly, it appears that in the formation of the teeth, this chalky substance is deposited upon, and by the teeth; that it is this substance which, when formed constitutes the *semi-osseous strata* which I have demonstrated to you, and which is to be seen upon every tooth, where there is an enamel, and that it is through this semi-osseous strata, or by it that the more subtile parts of the ossific matter of the tooth is infiltrated, strained off, or deposited, which, when crystallized, forms the enamel or cortex striatus.

This opinion is rendered the more probable, and is fully illustrated by the following considerations.

Whoever will consider the difference between the texture of the enamel, and bone of a tooth, will readily grant, that it is next to impossible, that these two substances could ever be so intimately united, without the agency of this, or some other intermediate substance.

Secondly, that in the living tooth this *semi-osseous strata* is organized and possesses a living principle, and is necessarily so, or it would by violence cleave from the tooth, (since it is organized) bringing the enamel with it.

Thirdly, it is necessarily endowed with the living principle in order to support and nourish the enamel, which would otherwise become dead, discoloured, and fall away by action of heat, and acrid secretions, which at *all* times prevail in a greater or less degree in the mouth.

This, I am sensible is directly opposite to the opinion of Dr. Blake, who maintains, that after the enamel is once formed or perfected, it receives not the slightest degree of nourishment.

On this particular point, a few observations, I hope, will not be considered unseasonable.

That the enamel, which is supported by the semi-osseous strata, is nourished, is not only a natural conclusion, but demonstrated from the following circumstance. Whenever any acrid matter penetrates the enamel, at however small a point, and near the gum, it soon spreads, destroys the living principle in the *semi-osseous strata*, its union with the bone of the tooth is broken up, and with it the enamel falls; constituting no doubt, what is generally termed denudation; leaving the bone of the tooth underneath exposed to view.

It may be asked, since the *semi-osseous strata* is once exposed, why does not the destruction go on till the tooth is deprived of its enamel? With the same propriety, may be asked the following question; why does not gangrene, when first it makes its appearance, always go on till it destroys the patient:—I presume the following answer will suffice for both, (viz.) That by some modification or effort of the living principle, it overpowers, or subdues the diseased action, thereby setting bounds to its progress.

That the teeth not only possess a living principle, and are nourished, and the *enamel* also, must appear evident from the following:—

Dr. Blake acknowledges what is a well known fact, that, "If by chance the vessels which enter the roots, and are distributed on the pulp, be torn or destroyed, the body of the tooth becomes discoloured, sometimes nearly black."

Not only so, but human teeth artificially substituted in the mouth of a person, are subject to the same change, and in a few years become soft, but never cartilagious, and entirely unfit for use.

In this case the discoloured bone does not act altogether as a foil for the enamel, but the enamel itself is changed in colour; and as its point of union with the bony part is destroyed, it changes into dark brown spots, which at length fall off from the bone.

We have more complete illustrations of this fact in artificial teeth, made of the tooth of the Hippopotamus. This, like all other substances partaking of the quality of ivory or bone, is in a few years destroyed, when made into artificial teeth, and set in the human mouth. And likewise, in this case, not only the osseous part is gradually destroyed, but the enamel, or cortex striatus seems to keep pace with it, and changes into dark brown, or rusty spots, which in some instances pervade the whole enamel, and what is a little singular, if the bony part of the tooth becomes soft and almost black by long use, the bone may, by a particular process, be rendered almost as white as ever; but no process whatever, will restore the enamel to its primeval beauty when once those spots make their appearance. Besides, the part of the artificial tooth which is hollowed out to be fitted to the gums, leaves the superior edge of the tooth thin, and which is generally soonest pervaded by the *destroying agent*.

As soon as it penetrates the *semi-osseous strata*, or point of union of the enamel with the bone, the adhesion is destroyed and the enamel flakes or crumbles off, leaving the surface of the bone underneath smooth but discoloured.

Was not the enamel on healthy teeth in the human mouth to participate in the living principle inherent in the teeth, and consequently be nourished, it would ultimately fall into a similar state, and perish, which is never the case except partially, while the tooth remains duly organized and healthy.

Having offered my opinion on the formation of the enamel of teeth, with some occasional remarks, I shall proceed to explain to you my opinion also, on the formation of the crusta petrosa, which is said to be deposited by the external lamella, or membrane which surrounds the pulps of the teeth.

There is not perhaps, in the whole animal economy, so striking an example, so complete a specimen of the manner in which bone is deposited and formed, as is presented in the examination of the teeth of man and animals; which, had Duhamel or Smellie, (I forget which) attended to, he would have but little occasion to resort to the periosteum (in a natural state) to account for the manner in which bone is formed.

This I think will appear evident to you, on a view of the different cases which I shall adduce in the course of my remarks.

The crusta petrosa, which is to be found in the teeth of almost all graminivorous animals is said to differ in substance from bone, or the enamel of a tooth, being whiter and more brittle. On the body or crown of a tooth it is without doubt more brittle; and for a very good reason. Where it is deposited upon the enamel of a tooth, it is cut off from all nourishment, therefore does not possess that tenacity which it otherwise would do. But on the roots of the grinders of those animals where it continues to be deposited for a time unknown, after the tooth is formed, it retains every characterestic, and is in reality, as perfect a one as there is in any part of the body; and will, I presume, on a strict analysis, afford the same results, or nearly so, as that which is universally admitted to be real bone.

Hence, there seems to have been but little necessity of resorting to the membrane as the medium by which this substance is deposited, since it (the membrane) contains blood vessels, ramifications of which are distributed all over it.

Thus it is with the membranes which line the processes or sockets of the superior grinders of the cow, buffaloe, &c. Numerous little foramina are seen, through which pass small branches of blood vessels to be ramified all over the membranes lining the sockets. These little foramina (I do not mean canullæ) are very perceptible in the plate which separates the sinuses and antrum of the superior maxillary bone, from the teeth of those animals. (Here also I do not include the foramina through which vessels and nerves are sent down into the teeth to nourish them.)

Hence the constant secretion of bony matter, or crusta petrosa on the roots of those grinders, after the pulps had completed their offices in forming the teeth.

As the animal advances in age, we see little spiculæ shooting out from the sides of the roots, and corresponding exactly with these foramina, as if (the circulation becoming less vigorous, and there being but little probability of much longer usefulness) to close them up, as the period of the dissolution of the animal is approaching.

This of itself might seem sufficient to demonstrate the manner in which bone is deposited and formed by the action of the arteries; but for a more complete illustration, I will return to the external lamella or membrane, duplicatures of which are sent down to deposit the crusta petrosa, in the conical processes as beforementioned. Here, instead, of bone (or crusta pretrosa) being deposited in these processes by the duplicature of the membrane, we have what I consider proof positive of its being deposited only by the arteries that are distributed upon the membrane. In describing the substance which is found in the conical processes of the grinders of different animals, Dr. Blake observes, "This adventitious matter remains quite *spongy*, and of a different colour and texture from any of the *other three* above described parts: In the cow, it is of a blackish, or dark brown colour. This spongy appearance is only manifest in those cases where the tooth is much worn down; then it is, that we find this bone, or crusta petrosa less perfectly formed, and which becomes still less so in general towards the bottom, or termination of the processes, until, in some instances, as I before observed, it ends in a hollow cavity; in others something resembling *dried blood*.

If we examine those processes critically, instead of finding them spongy, we see from four, to six, or seven very small holes, or foramina, arranged mostly in a line, at unequal distances, and following the centre of the curve of the process.

This appearance I shall account for in the following manner:—The bony substance is deposited by the arteries upon the internal sides of these hollow processes, or otherwise upon the enamel that surrounds them; as the space is filled up, and the sides approximate each other, two two folds of the duplicature likewise approximate, until they are brought into perfect contact; by this time the space is filled with bone; but in consequence of ossification commencing at the top of the tooth (and also in those processes) and being then perfected first, the arteries and vessels are gradually interrupted. As the circulation is interrupted the blood is thrown into the vessels below, without the power of returning. As the tooth is completed above the arteries and vessels, are entirely cut off, and no appearance of them to be seen; but as the tooth wears down, those little foramina appear in the order we see them, and which were doubtless once occupied by blood vessels; for in examining the section of a grinder, we can trace those holes through the body of it, still filled with a substance, in appearance like dry blood—while the bony substance in the lower part of those processes is likewise tinged sometimes with a reddish, brown, and almost black colour, as Dr. Blake observes.

We sometimes see in the superior grinders of the horse after being somewhat worn down, two of those little foramina, one and sometimes two in the centre of the conical process, which can be traced quite to the bottom of it, having the same appearance as those above described.

It may be said, that these are unimportant details, and merely accidental, having no relation to the subject of ossification. But I cannot help viewing them in a very different light, and whatever they may appear to be in the opinion of some, they appear to me as letters or characters in nature's great alphabet, which, when combined form syllables and words by which we can read the description of some of her secret operations.

As another instance in which bone is deposited by the arteries, I shall adduce the following. It is said by almost every author who has written on the diseases of the teeth, that there is one to which they are liable, which is termed a swelling of the fangs or roots.

That there is an inflammation and thickening or swelling of the investing membrane of the fangs, I will admit, nothing is more common; but that there is a swelling of the fangs, I am not so readily inclined to believe.

That there is sometimes an enlargment of the fangs of human teeth, I am ready to allow; but not by inflammatory action in the bone or fang (as swelling of the fang would imply) but by the secretion of ossific matter deposited on the fang, subsequent to the complete formation of the tooth, thereby enlarging it; and this I shall account for in the following manner.

When a tooth is so far decayed, that the attachment of the nerve and blood vessels are broken up and no longer adhere to the canal of the tooth, they contract or retire towards the ends of the roots. In many instances a vesicle is soon after formed at the end of the fang; inflammation succeeds, attended with the most severe pain and throbbing, until the vesicle acquires frequently the size of a large pea.

This, like many other preternatural enlargments, or excrescences, is found on examination in an inflamed state, to be full of blood vessels; and thus it must be supposed that it finds some mode of accommodating itself to the bottom and sides of the socket; as it is impossible to be contained in the socket while it is entire, and in an unimpaired state, for the fangs are closely embraced by it on every side. When the inflammation in this enlarged membrane subsides, which is frequently the case, without coming to a suppuration, the circulation probably becomes languid, and the vessels deposit ossific matter upon the fang of the tooth, until it acquires nearly the size that the excrescence-like substance had previously occupied.—If inflammation should supervene, from whatever cause, at any subsequent period, and on the same root or fang, this excrescence or vesicle again enlarges, and soon finds or makes a passage through the external, and sometimes internal plates of the alveoli.* Swelling and inflammation soon spread through the surrounding integuments, and suppuration follows. When the tooth or fang is extracted in this state, the greater part of the enlarged membrane at the bottom of the fang is destroyed most probably by the presence of acrid pus lodged in the bottom of the socket.

That this enlargement of the fangs of teeth (by bony matter being deposited on them) takes place subsequent to the complete formation of the natural tooth, there remains no doubt. That it is produced in the above manner is equally as conclusive, since in no instance I believe is it to be seen in the human teeth, except when this affection of the membrane has prevailed. I have several of those specimens in my possession, some of which are so much enlarged at the extremity of the fang, as to have been mistaken by professional men for the crown of one of the bicuspedis (which they resemble) while the other, or upper end, being in a state of decay, was supposed to present an instance where the extremity had been absorbed while in the jaw.

The specimens which I allude to, have more the appearance of the crown of a tooth, because the additional bone is compact, and like other solid bone; consequently whiter than the root of the tooth, the extremities of which, where the blood vessels and nerve entered for the support of the tooth, are at the same time plainly to be seen, giving it the appearance of a tooth worn down at one of its points by mastication, until the bone under the enamel is exposed to view.

Lastly, I beg leave to call your attention to a more striking instance where bone is deposited alone by the blood vessels, for no other possible medium exists by which it can be deposited and formed. I am sensible that this subject needs no further illustration, since authors are agreed on it; but my object is to point out a more probable means by which bone or crusta petrosa is deposited, than by any membrane whatever. The teeth of men, as well as animals, are in most instances duly organized with nerves and blood vessels which terminate in a pulpy substance contained in a cavity in the body or crown of the tooth, proportionate to its size. In the incisores or cutting teeth of the cow, ox, buffaloe, &c. it is very large, in human teeth much less. Those teeth are in all cases subject to being worn down by mastication. In human teeth where the molares are prematurely decayed, or extracted, so that the remaining ones, if any, have no opposition, the action of the inferior jaw is thrown immediately upon the front teeth, and bicupsides; and in this instance, the under teeth, in the course of a few years, wear the upper ones, or those in the superior jaw, all away; so that in numerous instances, they are as even with the gums as if they had been sawed off.

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* This I consider the effect of acrid secretion from the vesicle or inflamed membrane; and analogous to an aneurismal sac, &c.

For the animals abovementioned, in proportion as the grinders are worn down, or the food on which they subsist is hard, gritty, &c., so likewise are the cutting teeth worn away. This wearing away of the substance is so rapid in some cases, as to render the teeth extremely susceptible, so that the animal abstains from food; more particularly when they have fed for some time where there is a plenty of sorrel. I mean they are often rendered so susceptible as to make it necessary to cauterize the teeth, to destroy their sensibility.

But no sooner does this wearing away, progress so far as to approach the sensible part of the bone of the tooth, than we see a beautiful display of the paternal care and tenderness of nature in protecting her works from injury; for the vessels in the teeth, begin immediately to deposit ossific matter in their cavity, in order to form a barrier against the injury, the vessels must sustain, as soon as they are exposed, which would be inevitable, was it not for this provision. The first appearance of the formation of bone in the cavity, is by a small conical point, which, as the tooth wears away, gradually increases in the form of a sugar-loaf, until the pulp, or vessels are completely obliterated, and the cavity entirely filled up.

It may be said, that ossific matter is deposited by the membrane also. I am sensible that the vessels that organize a tooth, are surrounded by a membrane of the most delicate texture, and which lines the canal of the tooth; and I shall readily show that the bone (at least in this instance) is not deposited by it, nor by any part of the tooth,

If deposited by this membrane, we have much reason to believe that the entire tooth was formed by it, and, that this filling up of the cavity, is only the completion of its office or operation, which has gradually progressed from the first point of ossification on the pulp.

If this were true, there would doubtless have been the most intimate and perfect union of this supervening substance that fills the cavity, and the bone of the tooth, composing one uninterupted mass, which is not the case. This little body of osseous matter that fills the cavity of the tooth, may be easily pushed away when the tooth is split open, and even pushed out by an instrument inserted into the canal of the tooth, which evidently shews that it was deposited and formed, subsequent to the formation and completion of the tooth, and for no other purpose than to preserve the due organization of the tooth or teeth, which would otherwise have been prematurely destroyed by the exposure of the vessels.

This is only one, of innumerable instances, in which we see this maternal care manifested. We see it on the soles of our feet, and those of all four-footed animals destitute of hoofs; in our hands and on our elbows, by the thickening of the skin; on the hinder legs of those animals which often stand erect; as the squirrel, rabbit, hare, &c. Also on the neck and beneath the yoke of the docile and humble ox; and even on the breast-bone of those fowls that sit upon a roost, where is seen a callous thickening, or indurated skin, to protect the subjacent parts from injury.*

Dr. Blake has (if correct) assigned the crusta petrosa to very important use; for he observes "The crusta petrosa is therefore deposited for the membranes to adhere to, *and also to prevent* the sockets from being injured by the violent motion performed in grinding."

There are many animals, on whose teeth and grinders there is but little or no appearance of the crusta petrosa, and yet we see no injury arising from a deficiency of it.

The grinders of the mammoth (if I mistake not) are destitute of the crusta petrosa, and if it can be considered as necessary to shield the sockets from injury in any one instance, if we may judge from the form and size of the jaw and teeth, and the probable efforts they intended to sustain, we must admit that it is necessary in this case.

The tusks of the hippopotamus are sometimes covered with substances resembling the crusta petrosa (at least that portion contained within the jaw) and a person acquainted with those teeth, will always make choice of these in preference to the others, provided the transverse form suits his purpose; for the crusta petrosa is easily removed, and underneath it the enamel remains untarnished, or in general without stains, and beautifully white. At other times we see them almost entirely destitute of any signs of it.

If our opinions may be regulated by the size and form of those tusks, and the corresponding part, and their probable use, it will readily be admitted, that, if the agency of any substance is or can be necessary to screen the sockets from injury, it will also be in this instance.

In general the size and form of the jaws and grinding teeth, of almost all animals, seem to be regulated by the various efforts and degrees of action, they were destined to sustain. The peculiar conformation and adaptation of the parts are so admirably constructed and fitted to each other, as to preclude the necessity of any aid to prevent injuries to the adjacent parts.

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* How does this tally with the opinion, that aneurismal tumours beat away the bones ?

Hence we are left to consider the disposition of the crusta petrosa on the teeth of different animals, as a characteristic in nature, by which, as in botany, the particular order and class, in the immense chain of animal creation, is easily designated, or pointed out to man.

NATIONAL DENTISTS' SOCIETY.

Extracts from the Minutes of a CONVENTION OF DENTISTS, *assembled at the American Hotel, in the City of New-York, on the 18th day of August, in the year of Our Lord, one thousand eight hundred and forty.*

At ten o'clock, A. M., on motion of HORACE H. HAYDEN M. D. of *Baltimore*, the convention was called to order by nominating ELISHA BAKER, of the *City of New-York* as chairman, and SOLYMAN BROWN, A. M. of the same city, Secretary.

Present personally :—Horace H. Hayden, M. D. of Baltimore; L. S. Parmly, of New Orleans; Elisha Baker, of New-York; Patrick Houston, M. D. of Charleston, S. C; Eleazar Parmly, M. D. of New-York; Enoch Noyes, of Baltimore; Vernon Cuyler, M. D. of Hartford Conn; John Lovejoy of New-York; Chapin A. Harris, M. D, of Baltimore; Jahial Parmly, of New-York; Joseph N. Foster, M. D. of New-York; Augustus Woodruff Brown, of New-York; Charles O Baker, of New-York; J. Smith Dodge of New-York; and Solyman Brown, of N. Y.

Present by proxy :—Lewis Roper, M. D. of Philadelphia; Daniel Harrington, of Philadelphia. Present by letter :—J. McIlhany, of Philadelphia; E. B. Gardette of Philadelphia; Edward Hudson, M. D. of Philadelphia; William Arnold, M. D. of New-York; Edward Maynard, M. D. of Washington City; Jas. S. Gunnell M. D of Washington City; Isaac J. Greenwood, of New-York; Josiah F. Flagg, M. D. Boston, and S. Spooner, of New-York. Present by invitation :—Leonard Macall, M. D. of Batimore, John Trenor, M. D. of New-York; Elihu Blake, of New-York; Dr. Greenwood, of Boston; Dr. Keep, of Boston; Daniel Harwood, M. D. of Boston; Samuel W. Parmly, of New-York; E. G. Tucker, M. D. New-York; R. Burr, of Philadelphia; F. B. Chewning, Richmond Va.; S. M. Sheppard, Petersburg Va. Joshua Tucker, M. D. Boston.

On motion of Dr. Harris, Resolved that it is the opinion of this covention that the science of Dental Surgery would be advanced, and the interests of all well informed practitioners and community at large, promoted, by the formation of a national society of dentists; therefore resolved furthermore, that in order to the accomplishment of this object, a committee consisting of three persons, be appointed by the chairman of this convention, to prepare the form of a constitution for such a society with instructions to report the same as soon as they shall have performed their duty.

The foregoing resolutions having passed unanimously, Dr. Harris, Mr. S. Brown, and Dr. Cuyler, were appointed on said committee.

For the purpose of giving said committee time to prepare their report, and for the greater convenience of the convention, it was, on motion, resolved that the meeting adjourn to the residence of the Messrs S. & A. W. Brown No. 13 Park Place, and to re-assemble at 12 o'clock this day.

Tuesday Aug. 18th 12 o'clock, M.—The Convention re-opened at 13 Park Place—Present as before.

The chairman of the committee on the constitution made the following report. That they had complied with the instruction of the convention, and with the consent of the chairman would present to the secretary the form of a constitution for the National Society of Dental Surgeons.

Whereupon Dr. Hayden expressed his desire of making a few brief remarks before submitting the constitution to the consideration of the meeting.

The formaton of a National Society of Dentists, he remarked, had been long a favorite project with himself; and he was happy to say, that he had never found himself wholly alone in this desire. Many years ago he had consulted with the elder Hudson of Philadelphia, who was favourably inclined to such an association. On a visit to Boston and other Eastern cities he had consulted his professional brethern on the same question. He found them ready to co-operate in any practicable scheme for the elevation of the profession, but they were inclined to doubt whether any thing useful could be accomplished by any other than individual efforts. Of any advantages that could result from associated influence, they were mostly skeptical, especially in Boston. It was somewhat otherwise with a few of the profession in the city of New-York. Here several of his brethern were anxious to disseminate knowledge, cultivate social intercourse, and make an effort to elevate the profession of Dental Surgery from its present neglected condition to the dignity of a science. In Philadelphia, Baltimore, Washington and a few other cities his plan was received with favor by some of the individuals with whom he consulted.

The speaker adverted in the next place to the condition of the dental art at the time he entered upon its duties forty three-years ago. Then, said he, the name of dentist was a reproach and a by-word; but he resolved that his son whom he intended to educate to his own calling, should find the profession so far improved and exalted as that it should be no longer a disgrace to be called a dentist. To this end he enquired of the elder

Greenwood of New-York for books on the subject of dental theory and practice. That gentleman informed him of the work of John Hunter which he procured. Soon after he obtained possession of some few other works both in French and English. From that time he has seen the science assuming more and more importance in the public eye, while men of learning, worth and genius have been added from year to year to the rank of its professors.

At the present period, continued the speaker, renewed efforts are making in England, France and Scotland, to place our profession on still higher ground than it has yet attained; and shall we of these United States of America, remain inactive in this grand endeavour? For myself, said he, I cannot brook defeat in this favorite undertaking. I prefer rather to make renewed and redoubled efforts to secure success. If, like the Jews, we are scattered and despised, may we not like that persecuted people, at least hope for a day of restoration to our promised land! There are indeed many obstacles still to overcome. A new race of Canaanites must be expelled from our borders. Many errors must be exploded, and much ignorance must be dispelled, before the light of truth will beam clearly upon our path; but with diligence, zeal and perseverance, we are certain of ultimate success. Let us, therefore, go forward in the good cause, unintimidated by the skepticism of the faithless, the fears of the timid, or the apathy of the selfish. If there are some who prefer to plod onward in the path of private enterprise, let us unite our efforts in one great social endeavor to elevate our profession from the degraded condition to which it has sunk, and in which it must ever remain until the high minded and well educated amongst its practitioners shall unitedly arise and shake themselves from the dust.

Dr. Hayden then offered a resolution that the Secretary proceed to the reading of the Constitution, as reported by the Committee appointed for that purpose; whereupon the Secretary, by order of the Chairman, read as follows :—

PREAMBLE

OF THE OBJECTS OF THE SOCIETY.

ARTICLE I.

The objects of this Society are to promote union and harmony among all respectable and well informed Dental Surgeons; to advance the science by free communication and interchange of sentiments, either written or verbal, between members of the Society, both in this and other countries; in fine, to give character and respectability to the profession, by establishing a line of distinction between the truly meritorious and skilful, and such as riot in the ill gotten fruit of unblushing impudence and empiricism.

ART. II. *Of the name of the Society.*

The Society shall be known and designated by the name and title of "The American Society of Dental Surgeons."

ART. III. *Of the Officers of the Society.*

SEC. 1. The Officers of the Society shall consist of a President, and three Vice Presidents, a recording and a corresponding Secretary, a Treasurer, a Librarian, an Executive, an Examining and a Publishing Committee.

SEC. 2. The election of the above named Officers shall be by ballot, at a regular annual meeting of the Society—a majority of votes determining the election.

ART. IV. *Of Members of the Society.*

There shall be two classes of members known and recognized as acting Members or Fellows, and Honorary Members; the former consisting of those who subscribe this constitution either personally or by proxy, and pay into the treasury the annual dues required by this constitution; and the latter embracing such members as are merely elected to membership.

ART. V. *Of the Requisitions of Membership.*

SEC. 1. Each and every Acting Member of this society. shall either have been such by virtue of his attendance in person, by proxy, or by letter, at the time of its formation, or as shall be afterwards elected as prescribed by this constitution, and subscribe to the same.

SEC. 2. Each and every Acting Member shall pay into the Treasury of the Society the annual sum of Five Dollars, for the benefit of its funds.

SEC. 3. Each and every Acting Member shall be required to attend the Society at least once in three years, unless excused by the Society.

ART. VI. *Of the Election of Members.*

SEC. 1. All members of the Society, excepting those who were Acting Members at the time of forming the same and establishing this constitution, shall be elected as follows, viz.—The candidate for membership shall be proposed at a regular meeting by the Executive Committee, whereupon two Tellers shall be appointed by the presiding Officer, who shall collect the ballots, consisting of slips of paper having plainly written on them either *Yea* or *Nay*. In case two thirds of the members present shall vote in the affirmative the candidate shall be declared to have been duly elected a member of this society.

ART. VII. *Of the expulsion of Members.*

SEC. 1. Any member of the society may be expelled for immoral conduct, malpractice in business or other sufficient cause, on motion of one member, seconded by another at any regular meeting of the society, in which case a majority of three-fourths of the members present, shall be required.

ART. VIII. *Of the Meetings of the Society.*

Sec. 1. The Meetings of the Society shall be held annually by adjournment, from time to time, and from place to place, agreeably to the will of the Society.

ART. IX. *Of the resources of the Society.*

Sec. 1. The Society may receive contributions of money, books, or other property, which may be either used or sold in aid of its purposes.

Sec. 2. Each and every candidate examined and admitted to membership, shall pay to the Treasurer a fee of twenty-five dollars, before receiving his diploma.

Sec. 3. Each and every person who shall become an active member of the Society by election, shall pay ten dollars for the benefit of its funds, which shall entitle him to a diploma.

ART. X. *Of the disposition of the funds of the Society.*

Sec. 1. The funds of the Society may be appropriated to the purchase of lands, tenements, chemical or philosophical apparatus,—the publishing of books, tracts, and other papers and documents; and to such charitable objects as shall hereinafter be enumerated.

ART. XI. *Of the distribution of the effects of this Society, in the event of its final dissolution.*

Sec. 1. In case a dissolution of the Society shall at any time be proposed, a meeting shall be called specially for that purpose; and the consent of three-fourths of its members be required to effect it.

Sec. 2. Should the Society thus be dissolved by its own act, the property belonging to it shall be sold by order of the President, or by any three Fellows who shall obtain authority from a majority of the living and subscribing members, and the assets of sale shall be equally divided among the subscribing members.

ART. XII. *Of the indispensible qualifications of candidates who have never yet entered upon professional practice.*

Sec. 1. The candidate shall be at least twenty one years of age; shall have a good English education; shall produce evidence of unexceptionable moral character; and shall have studied and practiced for the full term of two years with some practical dentist known as such to this Society.

Sec. 2. No candidate for membership, who has the diploma of any Dental College, regularly chartered in any of the United States, shall be subjected to re-examination by the Examining Committee of this Society; but shall be entitled to a Diploma by complying with the By-Laws.

ART. XIII. *Of the Quorum required to transact business; and of the contingency of there being no quorum present at any meeting.*

Sec. 1. Seven acting Members, or Fellows, of the Society, besides the President or Chairman, shall be necessary for the transaction of business, at the opening of any annual meeting.

Sec. 2. In the event that a quorum cannot be obtained at any regular meeting of the Society, the time of meeting on the following year shall be the second Tuesday of August, and the place the same as on the preceding year.

ART. XIV. *Of the charitable objects of the Society.*

Sec. 1. Any surplus monies in the treasury, may be appropriated, at any regular meeting of the Society, for the aid and relief of the widows and orphans of deceased members; or for the benefit of living members reduced to want, by sickness or other calamity; it being provided that no such appropriation shall be made without the consent of two-thirds of the members present.

Sec. 2. Other charitable or patriotic appropriations may be made at any regular meeting of the Society, by a majority of three-fourths of the members present.

Sec. 3. The President may at any time, give pecuniary assistance to any member, or to the surviving family of any deceased member, out of any monies in the treasury, deposited there by benevolent individuals.

ART. XV. *Of alterations and amendments of this Constitution.*

Sec. 1. Any alteration, amendment, or revision of this Constitution, may be made at any regular meeting of the Society, by the joint assent of three fourths of the Fellows present at such meeting.

HORACE H. HAYDEN.
ELEAZAR PARMLY.
VERNON CUYLER.
ELISHA BAKER.
JOHN LOVEJOY.
L. S. PARMLY.
CHAPIN A. HARRIS.
CHARLES O. BAKER.
P. HOUSTON.
ENOCH NOYES.
JAHIAL PARMLY.
SOLYMAN BROWN.
J. SMITH DODGE.
JOSEPH H. FOSTER.
A. WOODRUFF BROWN.

The foregoing Constitution having been read, article by article, and amended, was unanimously adopted; whereupon Eleazar Parmly, after stating that the necessity of leaving the city on indispensable business, would deprive him of the pleasure of taking further part in the proceedings of the Convention, read the following communication, which was ordered to be deposited in the archives of the society:

Mr. Chairman,

I feel myself happy in being of the number of those whose names shall be transmitted, in the act which we have just performed, to the latest posterity; and whose memories will live in the history of our profession, long after our mortal remains shall have been gathered to the home of our fathers. We can easily imagine the glow of patriotic enthusiasm which animates, at this day, the hearts of those who can trace the blood which flows in their veins to the heroes of the American Revolution, who signed their names to that great political document which secures to us our national independence. And why is it, that this exulting self-congratulation and honorable pride, are felt by the descendants of that band of patriots whose memories shall live in the hearts of their countrymen as long as they remain the happy citizens of this glorious and independent republic? It is in consequence of the struggles through which they passed in order to acquire the power of calling themselves a free and sovereign people; and of the sacrifices which they made for the good of their common country.

Will not a similar feeling kindle in the breasts of those who shall come after us, when a small pamphlet shall fall into their hands, either by accident or design, bearing the names of those individuals of this assembly, to whom they can claim the affinity of kindred blood; may not a noble pride be felt by our children, and even by our children's children, when they read that their ancestors were of the little band who met from distant cities, to rescue a noble Science from the degradation to which it had been reduced by ignorance, selfishness and quackery! And will it be no source of pleasing recollection to ourselves in the subsequent stages of our existence, that on such a day of such a year, we met each other in this place, and signed a document which declared ourselves members of a profession which afforded ample scope for all the moral, intellectual and physical energies of our nature engaged for the general good of our fellow men!

Our forefathers met with opposition and oppression in every attempt to establish their rights as men. We too have met in former years with indignities and sarcasms in every attempt to sustain our privileges as members of our profession. We have, I presume, all of us, the mortification to know, that in this country, more particularly than in any other, the community at large have been accustomed to regard men and gentlemen too, as unfit for the drawing rooms of the rich and the fashionable, if they attach themselves to the profession which we are resolved to honor and to elevate. It is time to blot from the annals of society this degrading feature, and to claim for ourselves a full equality with the honorable avocations of our fellow men. We owe it to ourselves; and we owe it especially to our children.

The support of the Constitution which has just been adopted, is, in my opinion, an object worthy of our vigorous and united efforts. Personal fame and aggrandizement, should never be allowed to constitute predominant ingredients in the composition of our professional ambition.

Nobler motives shall animate our zeal, while engaged in laying the corner stone of a structure which, completed by our successors, shall, at some future day, command the respect, if not the admiration, of the world.

Without such an object, our present undertaking would be unworthy of men ; and our present meeting a school boy amusement. But I trust we have come together from distant cities of the union, with a settled determination to carry out in detail, with manly vigor, the objects proposed by that instrument which we have just declared to be a fit constitution for an American Society of Surgeon Dentists.

It will be to each of us a fresh stimulus to exertion, that the failure of our plans is not only confidently predicted, but ardently desired by many whose professional ambition knows no impulse beyond a thirst for gold. Besides, should we fail in our object of giving character and consistency to the profession ; of imparting to it the form of a regular Science ; and of uniting its members for the common good,—we shall discourage, perhaps, for years to come, a similar attempt. On the other hand, if by persevering-diligence, we not only deserve, but command success ; if our proposed Society should effect the object we have in view ; and if the prophets among our enemies, like those of Baal, should invoke in vain the interposition of their gods ; then, indeed, shall we have performed a work worthy of the high ambition of christians and of men ; and the children who come after us, shall not find themselves degraded by the calling of their progenitors.

With these sentiments thus hastily thrown together, I must bid you adieu, after expressing my hearty co-operation in all the plans of usefulness which your wisdom may devise. ELEAZAR PARMLY.

August 19, morning Session. The Convention assembled agreeably to adjournment, at the residence of Dr. BAKER, No. 6 Warren Street. After the reading and approval of the minutes of the preceding session ; and after the reading of the Constitution as transcribed by the Secretary, which was also approved ; it was, on motion, *resolved,* That a Committee on By-Laws be appointed from the Chair, whereupon, Messrs. Harris, S. Brown and Noyes, were named on that Committee.

The following are the By-Laws reported by that committee, and ultimately amended and approved by the Convention.

BY-LAWS.

ART. I. *Of the duties of Officers.*

SEC. 1. It shall be the duty of the President to preside at all Meetings of the Society, when present ; to sign the diplomas conferred on members during his term of office ; to confer all honorary distinctions awarded by the Society, whether degrees of Dental Surgery, medals or other testimonials ; and to draw upon the treasurer for all monies appropriated by the Society.

SEC. 2. It shall be the duty of the first Vice President to preside at all meetings of the Society in the absence of the President ; and to perform the other prescribed duties of the President, in case of his death, resignation, sickness, or other disability.

SEC. 3. It shall be the duty of the second and third Vice Presidents, to perform the duties of the above named officers, during their absence, or inability.

SEC. 4. A President *pro-tem.* shall be appointed to preside at any meeting, when the President and Vice Presidents are all absent.

SEC. 5. It shall be the duty of the Recording Secretary, to note in a book kept for the purpose, all the proceedings of the Society, during the term of his office, and to furnish copies of any parts thereof, at the order of the President, or his substitutes; and, also, to deliver the said book and proceedings to his successor in office. He shall also keep the seal of the Society, together with the copper-plate, from which diplomas, certificates, or degrees, are struck; also all the records belonging to the Society, designed to be preserved; and he shall furthermore countersign all diplomas, and set the seal of the Society to all instruments requiring the same; he shall also notify every member of the time and place of meeting of the Society, at least two months before the time of said meeting.

SEC. 6. It shall be the duty of the Corresponding Secretary, to conduct the domestic and foreign correspondence of the Society, in accordance with the advice of the President, or the express will of the Society communicated to him by the recording Secretary, and at his own discretion, in cases of emergency, provided it does not interfere with any of the prescribed rules of the Society.

SEC. 7. It shall be the duty of the Treasurer to keep all the monies of the Society committed to his trust; to pay them over to the order of the President, countersigned by the Secretary, and to keep a correct account of the same in a book or books kept for that purpose.

SEC. 8. It shall be the duty of the Librarian to keep the books belonging to the Society's Library; to obtain insurance on the same; and to take receipts of all persons who receive books from his hands by order of the Society; and in case of failure of the member receiving such book, to return it in twelve months, he shall forfeit, and pay to the Society, four times its price.

SEC. 9. It shall be the duty of the Executive Committee, to examine the accounts of the Treasurer, and report the same to the Society at its annual meetings; to see that all the rules and regulations of the Society are duly enforced and executed; and it shall also be the duty of such committee, to enquire into the professional reputation and character of all candidates proposed, or who may apply for membership, and report the same to the Society, which, being satisfactory, such candidates shall be ballotted for, for admission into the same.

SEC. 10. It shall be the duty of the Examining Committee, to appoint a time and place, at least once in each year, for the examination of applicants for the degree of Doctor of Dental Surgery; to examine such persons strictly and faithfully, in relation to their qualifications to enter upon the practice of the profession; and their certificate shall entitle the holder to receive the diploma of the Society conferring the degree of Doctor of Dental Surgery.

Sec. 11. It shall be the duty of the Publishing Committee, to superintend the printing and publishing of all books, tracts, and other documents, issued by the Society.

ART. II. *Of the Emoluments of Office.*

Sec. 1. No officer shall receive any emolument unless in cases of special appropriation, excepting the Recording Secretary, whose duty it shall be to attend the meeting of the society next subsequent to his election; and who shall be entitled to his travelling expences and the sum of five dollars per diem during his necessary absence from business, in all cases where he is compelled to leave his place of residence.

ART. III. *Of the powers vested in the Vice Presidents.*

Sec. 1. Each of the Vice Presidents may, if there be a sufficient number of the members of this society residing in his immediate vicinity, convene them at any time, and when so convened, they shall have power to elect such officers from among their own number as may be necessary for the transaction of whatever business of a local nature may come before them; and it shall be obligatory on them to report their proceedings regularly at each annual meeting of the parent society.

ART. IV. *Of the Privileges of Members.*

Sec. 1. Each and every acting Member, or Fellow of the Society, shall be entitled to debate and vote on all questions agitated at any meeting thereof, agreeably to the By Laws and Standing Rules and Regulations of the Society; and he shall moreover be eligible to any office in the gift of the Society; and, furthermore, he shall be entitled to a Diploma, or Degree of Doctor of Dental Surgery.

Sec. 2. Each and every Honorary Member shall be entitled to a seat at all meetings of the society;—shall have the privilege of debating all questions not involving pecuniary expenditure; and shall receive the Diploma, or Degree of Doctor of Dental Surgery by paying therefor to the Treasurer of the Society, the sum of Ten Dollars.

ART. V. *Of the Appointment of Members to certain duties.*

Sec. 1. It shall be the business of the Society, at each annual meeting, to appoint five of its Members to prepare Dissertations on some subjects connected with the profession; and also one Member to deliver an opening Address at the subsequent meeting.

Sec. 2. It shall moreover be the duty of the Society, from time to time, to appoint certain individuals to prepare Essays or any other Documents ordered by the Society.

ART. VI. *Of Awarding Premiums.*

Sec. 1. This Society may award premiums to Members, for dissertations on subjects that may at any time be specified by the Society at an annual meeting; also, for important improvements in Mechanical Dentistry, and the manufacture of Incorruptible Teeth; and also for any other suitable object.

Sec. 2. The question of preference in all such cases, shall be determined by the judgment of a Special Committee, appointed by the Society.

Sec. 3. Unsuccessful dissertations shall be at the disposal of their respective authors.

ART. VII.

Sec. 1. No Member shall speak more than twice to any question, without express permission of the Society, and then only fifteen minutes at each time.

Sec. 2. Any member shall be liable to be called to order for personal recrimination of any other member; or for wandering in his remarks from the subject of debate.

ART. VIII.

These By-Laws may be altered or amended, at any annual meeting of this Society, by a vote of two thirds of the members present.

Wednesday, August 19 — Evening Session. The Convention met at the house of Dr. Baker, agreeably to adjournment, whereupon, on motion to that effect, the Convention resolved itself into the American Society of Dental Surgeons.

On motion, *resolved*, That all the individuals, who have attended the Convention in person, by letter or by proxy, as well as those who have been invited to attend the same, be considered as members of this Society.

After adopting the Constitution and By-Laws, as recommended by the Convention, the Society proceeded to the election of its officers for the ensuing year, when the following gentlemen were chosen to the respective offices agreeably to the provisions of the Constitution and By-Laws of the Society.

HORACE H. HAYDEN, M. D., *President.*
JOSIAH F. FLAGG, M. D., *1st Vice President.*
ELEAZAR PARMLY, M. D., *2nd Vice President.*
E. B. GARDETTE, *3d Vice President.*
SOLYMAN BROWN, A. M., *Recording Secretary.*
CHAPIN A. HARRIS, M. D., *Corresponding Sec.*
ELISHA BAKER, *Treasurer.*
J. H. FOSTER, M. D., *Librarian.*

On motion, *resolved,* That the three Committees required by the Constitution, consist of five members each, who were duly elected as follows:

JAHIAL PARMLY,	EXECUTIVE COMMITTEE.
LEVI S. PARMLY,	
ENOCH NOYES,	
LEWIS ROPER,	
NATHAN C. KEEP,	
J. SMITH DODGE,	EXAMINING COMMITTEE.
DANIEL HARWOOD,	
DANIEL HARRINGTON,	
LEONARD MACALL,	
P. HOUSTON,	
SAMUEL W. PARMLY,	PUBLISHING COMMITTEE.
S. SPOONER,	
JOHN LOVEJOY,	
EDWARD HUDSON,	
JAMES S. GUNNELL,	

On motion the Society proceeded to the election of Members in accordance with the provisions of the Constitution and By Laws, when the following persons were duly elected as Members of the Society.

John Harris, M.D. *Georgetown, Ky.*
Cha's Hayden, *Washington City.*
F. H. Clark, *Baltimore.*
B. Monafeldt, *Charleston, S. C.*
Doct. Fisher, *Providence, R. I.*
Doct. Rogers, *Cincinnatti.*
R. Somerby, *Louisville, Ky.*
Samuel Avery, *N. Orleans.*
Doct. Sumner, *Providence.*
W. B. Scott, *Raleigh, N. C.*
J. A. Cleveland, *Charleston, S. C.*
O. P. Laird, *Columbus, Ga.*
Doct. Townsend, *Philadelphia.*
H. M. Hayden, *Baltimore.*
Oliver Holmes, *Baltimore.*
Ludolph Parmly, *Mobile.*
Nicholas Clute, *Louisville, Ky.*
Elbridge Bacon, M. D., *Boston.*
J. D. McCabe, *Richmond, Va.*
B. A. Rodriguez, *Charleston, S. C.*
Jahial Parmly, *Savannah.*
A. B. Hayden, *Savannah.*
Doct. Straw, *Bangor, Me.*
M. K. Bridges, *Brooklyn, N. Y.*

On motion, *resolved,* That the Society approve of the Establishment of the Baltimore College of Dental Surgery, and will co-operate with the other friends of that institution in promoting its designs.

Thursday morning, August 20. An election was held to appoint a member to deliver an address at the opening of the next meeting of the Society—when Dr. Hayden, the President, was chosen for that purpose.

On motion, *resolved,* That five persons be chosen to deliver dissertations on subjects connected with Dental Theory, or Practice, at the next annual Meeting of the Society; whereupon, Solyman Brown, J. Smith Dodge, Chapin A Harris, J. H. Foster, and Elisha Baker, were duly appointed.

Resolved, That the Society proceed to appoint twelve members to prepare Essays, on specified subjects, for the benefit of the profession. The following gentlemen were appointed.

1. L S. Parmly, on the best method of saving the natural teeth.
2. E. Baker, on ulcerated fangs, and the methods of cure.
3. E. Parmly, on the necessity of stopping carious teeth.
4. J. F. Flagg, on the Ligamentum Dentis, so called.
5. C. A. Harris, on the necessity of artificial teeth.
6. S. Brown, on the necessity of regulating the natural teeth.
7. J. Smith Dodge, on the extraction of diseased teeth.
8. L. Mackall, on Diseases of the Gums.
9. E. Noyes, on deciduous teeth.
10. J. S. Gunnell, on salivary Calculus.
11. John Harris, on the propriety of filing the teeth.
12. V. Cuyler on tooth ache.

Thursday evening, August 20th. Society met agreeably to adjournment, at the residence of Messrs. Tucker & Foster, No. 3 Park Place.

On motion, the meeting proceeded to the election of Honorary Members, in addition to those already chosen, whereupon the following new members were added to the Society.

Samuel Cartwright, of *London.*
Robert Nasmyth, of *Edinburg.*
Alexander Nasmyth, of *London.*
C. S. Brewster, of *Paris.*
John T. Edmonds, of *London.*
James McPherson, *Glasgow, Sc.*
A. G. Becht, *Hague, Netherlands.*
H. N. Fenn, *Rochester, N. Y.*
James Taylor, *Crawfordville, Ia.*
S. Blanding, M.D. *Columbia, S. C.*
Leonard Koecker, of *London.*
Thomas Bell, of *London.*
C. F. Delabarre, of *Paris.*
David Wemyss Jobson, of *Edinburg.*
E. Gidney, *Manchester, Eng.*
Edward Taylor, *Maysville, Ky.*
Solomon Keep, *Boston.*
Mons. Le Maire, *Paris.*

On motion—*Resolved*:—That a Committee on Seals, Diplomas, &c. be appointed. Dr. Harris, Dr. Maynard and Dr. Macall, were named by the President.

On motion—*Resolved*:—That the Corresponding Secretary notify the Members elect, of their having been chosen Members of the Society, and furnish each a copy of the Constitution and By Laws.

On motion—*Resolved*:—That Eleazar Parmly, M. D., be appointed as the Agent of the Society, to present a petition to the Legislature of the State of New-York, asking for a Charter, with power of conferring the degree of Doctor of Dental Surgery.

For the American Journal of Dental Science.

GALVANIC ACTION OF METALS IN THE MOUTH.

[BY JOSEPHUS BROCKWAY.]

MESSRS. EDITORS:—

Careful observation has satisfied me, that the present method of inserting teeth on gold plate, ought not to be continued; the different metals combined, convert the mouth into a galvanic battery.

It is not my purpose, were I competent, to discuss philosophically the "modus operandi" of galvanic action. I wish, simply to state a few plain facts connected with the practice of dentistry, leaving to the learned and practical chemist, the developement of just theory; simply premising, that galvanism is defined as being the method of exciting the electric principle by the action of some solutions upon two or more metals, differing in degrees of affinity for oxygen. It is a fact, the knowledge of which, is as old as galvanism itself—that the human saliva affords a solution fully competent to call into action the electric principle. Any two metals differing in degrees of attraction for oxygen, put into the mouth, produce at once a sensation and taste peculiar to galvanic action.

Deeming it unnecessary further to pursue the general principle, I come at once to a statement of facts, showing the inexpediency of continuing the present method of inserting teeth upon gold plate. It will therefore, be necessary, first to state what I suppose to be the method now in common use.

The practice which now prevails, and for several years has prevailed, both in Europe and America, is attended with the introduction of from three to six different metals into the same mouth.

First.—The mineral teeth have platina pins made fast to them in their fabrication.

Second.—These pins are attached to alloyed gold. The gold generally used being eighteen parts fine gold, and six silver and copper in different proportions, making eighteen carat gold.

Third.—The teeth are fastened to this alloyed gold by a still baser alloy of gold, called gold solder. This is usually made one half gold and the other half silver and copper, with the addition, frequently, or substitution, of brass or speltre—thus making the solder to consist of gold, silver, copper, and zinc. Some, indeed, use their solder and gold in greater purity, but none avoid the use of four different metals, differing in degrees of attraction for oxygen. I will name them in their order of affinity. Zinc, when used, copper, silver, gold, platina; or as the metals present themselves, ready for use, to the eye of the dentist, they stand in order, solder, gold, platina—and to these is often added, in the same mouth, tin—some of the teeth being filled with this metal, not to mention the poisonous metals, such as bismuth, and mercury, which quackery has introduced into the mouth, in the form of amalgams, fusible metals, pastes, succedaneums, &c.

The infancy of knowledge on the subject of galvanic action, ought, indeed, to offer an apology for the past usage of scientific dentists; but such will look in vain for a covert from the charge of quackery, if they refuse to submit to the lights which science and facts are daily disclosing on this subject.

I therefore proceed with my facts:—

And first,—I will state a single case as illustrative of the effects of two metals used in connexion, in the same mouth, upon the nervous system. About ten years ago, I inserted ten teeth for a Rev. gentleman, in Albany, New-York. This was previous to the common use of mineral teeth. I used the animal; they were united by a large flattened gold wire passing through the whole, turned at the ends, forming clasps or hooks, connecting them with the molar teeth; several of the teeth thus strung together, were hollow, that is, the cavities formerly occupied by the nerve and blood vessels were open. These cavities I filled with *tin foil.* This foil was thus brought in contact with the gold. On putting these teeth, thus prepared, into the mouth, the patient received several successive shocks, exclaiming, "what's that?" "what's that?" I told him I suspected I had erected a galvanic battery in his mouth, and immediately took them out and substituted gold instead of the tin,—and thus remedied the evil. But although this fact arrested me in the use of tin and gold in such a connexion, I did not then perceive the impropriety of using tin and gold in the same mouth, for I had the mistaken impression, that the two metals must come in contact in order to produce galvanic action.

But this fact has kept me somewhat awake to this subject, although, I confess I have been slow to admit the true cause of an almost every day complaint of patients. I should think it had been the fact in one half the cases where I have used such plates as described above, that I heard from my patient, among the first exclamations, "what makes this taste so?"—"Why how this tastes!"—"It tastes brassy!" &c. &c. For a long time I explained, and honestly too, by stating to them the fact that it had been cleansed in acid, and was not free from the taste of it, but soon would be. But since my attention has been called to the subject, I find it a fact too obvious to meet with a denial, that the plates thus combined, have a strong galvanic taste and action, like all base compound and combined metals; a taste and action upon the nerves, which only becomes tolerable by becoming familiar. But how far this galvanic taste and action is injurious to the nervous system, I pretend not to judge.

But I come now to what I conceive to be a palpable and deleterious effect. The galvanic action thus induced destroys the natural teeth.

The effects upon both the teeth and the nerves, differ, of course, with the difference in the nervous temperament, and the condition of the salivary secretion. Hence the injury sustained by teeth in contact with these plates will be much more apparent in some cases, than in others. But I doubt not every dentist who has carefully watched the results of his own operations, has been occasionally mortified and grieved on seeing the waste which has evidently followed the application of such plates.

But to this point I must bring a single case as an illustration. About twelve years ago, I set two lateral incisors, for Mr. H. of the city of Troy, N. Y. He was then, and now is, a man of sound constitution and good health, and had already passed the age in which the teeth of males are liable to the attacks of caries, so that it was not to be expected that his teeth, then sound, would fall the prey of this disease. The teeth which I set, at that time, were human teeth, set in a manner common with me. The two were connected by a flattened wire, as in the case before mentioned, and hooked to two neighboring teeth, of course no solder was used, nor other metal except gold.

These two teeth were worn about six years, during which time no symptoms of disease appeared about his other teeth, but when these were removed, now six years since, a gold plate with solder after the usual manner, was substituted. Since this, a most lamentable change has taken place in the condition of his teeth. They very soon began to exhibit the appearance of teeth, in a mouth surcharged with acidity, not unlike what is often seen in the case of a female during gestation, a strong and unconquerable disposition to decay, which it was found impossible to arrest by plugging, so that now instead of two, he is obliged to wear five artificial teeth, while several others have required plugging. I state this as being at once a strong and palpable case of galvanic action, resulting in the decomposition of teeth. I believe, however, it is a case which has parallels by the thousand.

The conviction, therefore, to me, is irresistible, that the use of compound and mixed metals in the mouth,is deleterious to the general health; but more especially to the health of the teeth; I therefore give it as my unhesitating opinion, that the present method of inserting the mineral teeth, must be superceded by a practice which shall allow of the use of but one metal in the same mouth; such a practice is attainable, and aside from the above considerations, will be attended with advantage, both to the dentist and his patients.

For nearly twenty years I have been in the habit of using gold hooks to fasten artificial teeth to natural ones; and when used unconnected with other metals, I have never known them occasion caries, though they sometimes wear, to their injury, the teeth to which they are attached. I conclude, therefore, that pure gold may be used without detriment, either within or around, the teeth, provided no other metal be used in the same mouth; and from long observation, I give it as my opinion, that, while it is objectionable to use gold in filling the front teeth, and tin for the back ones, the evil is very trifling, compared with the combination of metals as used at present in setting teeth in gold plates.

MEMORANDA.

From the Note Book of B. A. Rodriguez, M. D.

Elizabeth, daughter of Mr. Klink, called with her father to consult on the practicability of relieving a deformity of the lower maxillary bone. From his earliest recollections, his daughter had an obvious projection of this bone forward, and laterally to the right, disfiguring her face (Fig. 1) and impairing somewhat her utterance. So complete was the protrusion, that the upper row of teeth struck fully an eighth of an inch to the anterior of the lower; and the first incisor on the right, fell behind the first lower incisor of the same side, presenting a deformity that rendered the patient and her parents uneasy, and resolved to hazard all attempts that promised success, to rectify it. After close scrutiny, I saw nothing in the mobility of the joint, the absence of malformation, and the slight inconvenience a twist of the bone, to its proper position gave, that did not warrant fully, any attempt to repair the disorder. In truth, I regarded it more as deformity of habit, than a natural one, by which the lateral motion of the joint was more exercised, and the muscles of the right side disposed, from long use, to retain the bone in that position. I thought, if by any means, I could restore the bone to its nataral position, and retain it there a sufficient length of time, till the muscles of the left side, viz: the masseter and pterygoid, which preside over the lateral and forward motions of the joint, had regained their power of contractility, success must follow.

Regarding it more as the result of the loss of such power in these muscles than any lesion of the joint, I invented the metallic plates, which will be found in (Fig. 3.) and which, after the patient had worn for one month, fully answered the purpose intended. The lateral deformity is radically obviated, as the engraving, illustrating the original defect and

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Fig. 1. This was the appearance of the child when she called on me for assistance. The projection is manifest, both to the right and forward, and the deformity such as to disfigure and incommode her.

Fig. 1.

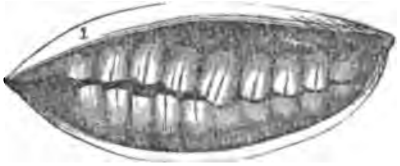
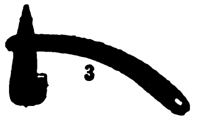


Fig. 3. This instrument is hatchet-shaped, with its longer end curving on itself, forming a loop that enclosed the tooth. At the extremity of the handie, are small holes for the insertion of wire, by which means it was lashed to the first bicuspid.



the remedy will shew. But here but one half of the undertaking was accomplished. After restoring the jaw to its natural form, I found that the upper row of teeth still struck on the interior of the lower, and that whenever the patient separated her lips the same ugly lapping of the lower jaw over the upper was visible. The mouth and teeth presented the reverse appearance, uniformly met with, and resembled strongly the sullen grin of the bull dog. To obviate this, I invented the accompanying instrument, (Fig. 2.) so arranged when placed on the upper central incisor of the right, and secured to the first bicuspid, that it operated as a lever in giving an outward direction to the tooth, and restoring it to its proper and natural condition. The constant use of this instrument has so far and fully rectified the second difficulty, that she now articulates without restraint; enjoys a free use of the jaw and differs in no particular from the ordinary appearance of other persons. Her parents are satisfied and she herself rejoices that Art has been able to triumph so signally over the freaks of Nature.

For the American Journal of Dental Science.

Messrs. Editors :—

The osseous union of the teeth has been of too frequent occurrence, and its existence too well established to need any confirming evidence to settle the question, which, until lately, has been a mooted one.

But as there is a peculiarity in the specimen which I have in my possession, differing in its appearance, from any that I have seen recorded, I have thought it would be interesting to the profession, to see a drawing with a history of the case.

About two years since, a gentleman (aged about thirty-five) called upon me for the purpose of having his teeth examined; at the same time complaining of a dull, heavy pain in the upper part of the face, extending back, in the direction of the temple.

In examining the teeth, I found the second superior molar considerably protruded from the alveolar cavity, and an accumulation of hard black tartar upon its fangs, with a considerable quantity of fetid pus discharged from the cavity. The dens sapientiæ was apparently sound and healthy,

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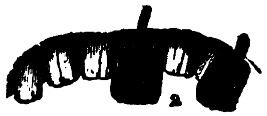
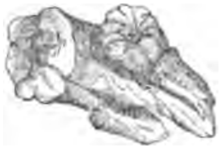
Fig. 2. This is the plate referred to, made of platina, bent on itself and mounted with two golden caps, intended to strike on the interior and laterally of the incisor and canine tooth of the upper maxillary. By the use of these plates, a forward and lateral motion was given to the jaw, and the deformity thus remedied by its use.



and had been in position some five or six years. Supposing it to be a case of necrosis, I advised the removal of the tooth. In performing the operation, I found the posterior one to be sensibly affected and remarked that they were connected; but deeming it of more importance to remove both, than suffer the one to remain, the operation was performed, and the teeth exhibited the following curious phenomenon.



The root of the dens sapientiæ, was of the conical form, adhering to the external posterior fang of the second molar; and also, upon the posterior portion of the internal fang, the appearance of each exhibiting, by its singular and unnatural enlargement, a clear and decided case of exostosis.

The abscess containing the matter, was situated between the external posterior and internal fangs, lying upon the superior surface of the crown and by morbid action, producing a caries extending to the dental cavity.

The striking difference between this case and those recorded by Mr. Fox, Bell, Parmly, and others, is this: — In those reported by them, the union has been produced during the ossification of the teeth. And in the one under consideration, it has been effected by a deposition of ossific matter after the formation and growth of the teeth upon their fangs brought in contact by the absorption of the transverse portion of the alveolar process.

Respectfully,

G. MERRYMAN.

Baltimore, June 6th, 1840.

THE AMERICAN SOCIETY OF DENTAL SURGEONS.

The extracts from the proceedings of the "*American Society of Dental Surgeons,*" contained in this number of the Journal, will, we doubt not, be received by our professional readers with pleasure. The formation of this Society forms a new epoch in the history of this department of Surgery; — it betokens, on the part of those concerned in the getting of it up, a determination to rescue the Science from the neglected condition in which it has so long remained, and to elevate it to a level with the other branches of medicine. That they will succeed in this, we hesitate not to affirm, provided the Society be properly conducted. Having set out with the determination to admit none to membership in it, except such as are respectable and known to be competent to practice the profession, it only remains to carry out this resolution to ensure for the association the beneficial results which its warmest friends have dared to anticipate. For our own part, we are sanguine in the belief that it will be productive of great good both to the profession and community at large. We rejoice, therefore, at its formation, and most fervently do we hope that the objects contemplated by it will be realized.

A National Society of Dental Surgeons being now organized, and we believe, under auspices that promise the most favourable and happy results, we trust that the educated and better informed members of the profession will come forward and unite their efforts with those who have engaged in this most noble and praiseworthy enterprise; for it is an enterprize which has for its object the advancement of the Science, the dignity and respectability of the avocation, and the good of community. Let not selfishness, jealousy, or sordid ambition, keep any one, having just claims to a scientific and thorough knowledge of the art, away. Nor let any one imagine that by his own individual efforts, however high, as a practitioner, in public estimation, he may stand, can remove from the profession, of which he is a member, the odium that empyricism has fixed upon it. This attaches, more or less, to all, and will continue to do so, until the educated and scientific of their members, shall, as a body put forth their efforts to elevate the standard of professional qualification.— To this end, a Society of this kind seems eminently calculated.

The advantages promised by it, are many. In the first place, it will tend to promote harmony and social intercourse, among its fellows. In the second, an interchange of sentiment on professional subjects, which cannot be otherwise than beneficial to all. In the third, its transactions, together with the communications that will, from time to time, be likely to be made to it, both from this and other countries, will contribute greatly to the literature of the art; and, in the fourth and last place, the inducements which it proposes to hold out to genius, will have a tendency to awaken a new spirit of enquiry and physiological research, both into the theoretical and practical departments of the profession that may result in the increase of its usefulness — in short, to explode error, and establish correct doctrines and a uniform system of practice, are among the most prominent of its designs.

Of the projector of the Society, Dr. Hayden, its present President, it may not become us to speak. To the profession, however, having been a member of it for forty-three years, he is well known. As a man of science, and as an eminent practitioner, none stands higher, either in this or any other country. But however distinguished a reputation he may have gained as a dental practitioner, or as a man of science, the carrying into successful operation this project, will secure to him a fame that will out-live and out-shine even that. When he shall have been forgotten as a dental practitioner and physiologist, he will be remembered by his professional successors, as the *father of the " American Society of Dental Surgeons."* Prominently connected with the Society, also, are the names of other distinguished men,—men, whose labours in this department of surgical knowledge, are too well, and too extensively known, to need any commendation from us. Those of Flagg, Parmly, Gardette, Harrington and Baker, as well as others which we could mention, have been long identified with the profession. Thus commenced, who can doubt that the efforts of the association will be crowned with success—the predictions of its enemies to the contrary notwithstanding.

Let it not be said, that, because it is opposed by a few, it will come to nought; but rather let those connected with it, put forth their energies to sustain and carry out its designs. Let them, by zealous and persevering exertions, bear down whatever of opposition may come in their way. Let them support and carry out the objects set forth in the instrument to which they have placed their signatures, and they will have peformed a work that shall signalize their names in all after times,—a work that will reflect upon themselves a credit of which they will never have cause to be ashamed, that will be recollected by those that shall come after them with pride, and that shall hereafter place the profession above reproach, and secure to its members the respect that is due to gentlemen and benefactors of mankind.

Having laid the foundation, let them go on with the superstructure, that, when they shall have passed from time, it may be in such a state of forwardness, that those who shall succeed them in the field of labour in which they have been, and are still engaged, may be induced to take hold and complete that which they shall have left unfinished.

The means for the bettering the condition of the profession, have been to us a subject of much reflection. To see its character elevated, has long been our most ardent desire, and through the agency and influence of this society, we trust that it will eventually be accomplished. We do not however, expect that it will effect an entire reformation in a single year, nor in five. To cleanse the profession from the leprosy of quackery

will, we are persuaded, require considerable time, and can only be done as the public shall be furnished with the means of discriminating between those that are qualified to practice, and those that are not. But by the agency of this Society, it will gradually become possessed of these means. [BALT. ED.

BIBLIOGRAPHICAL.

An Essay on Artificial Teeth, Obturators, and Palates, with the principles for their construction and application; illustrated by twenty-six cases and twenty-one plates. By LEONARD KOECKER, *Surgeon Dentist, Doctor in Medicine and Surgery, &c. London—S. Highley,* 32 *Fleet st., p p.* 194.

The above is a title of a work, which, though it was published five years ago, few copies of it have found their way to this country. Presuming, therefore, that it is but little known to our professional brethren on this side of the water, a brief notice of it may not be unacceptable to them. That it is a work of merit, the author's name is a sufficient guarantee. Dr. Koecker has been long known to the profession both in Europe and America as an author and practioner, and to his pen the literature of Dental Surgery is indebted for some of its richest and most valuable contributions. Having devoted himself to the profession, with the most untiring energy and zeal, for upwards of thirty years, and being possessed of a bold, active and enquiring mind, he has acquired a degree of skill in the treatment of dental and maxillary diseases possessed by, comparatively, very few. His opinions, therefore, are entitled to the highest consideration; and although we do not concur with him in all which he has advanced, we would not, on that account, withhold from him that high meed of praise to which we conceive him to be justly and richly entitled. As a dental pathologist and practitioner, he ranks among the very first in Europe. His "Principles of Dental Surgery," evince extensive practical observation; they are based upon a correct knowledge of the laws of disease, and if energetically followed out, cannot be otherwise than successful.

The first chapter of the work before us, treats "on the use and abuse of artificial teeth," and after speaking of the advantages that may result from these, when "*judiciously* and skilfully inserted," the author says—"the artificial may be rendered nearly an equivalent substitute for the natural organ. But as no mechanical part of any branch of surgery can be carried so near to perfection, so none demands *greater skill and nicety*, combined with a scientific knowledge in the practitioner. An injury done to the various parts of the mouth, by the insertion of one or more teeth upon erroneous principles, must render all future restorative efforts less useful; and it will often happen, that in correcting a small evil, a much greater will be created. Thus, one tooth may be inserted upon so false a principle, and in so unskilful a manner, as to loosen all around it, and eventually to cause the loss of the entire set.

The evil spoken of here is one of very common occurrence, and has been instrumental in bringing down upon the profession much obloquy and reproach. Abuses of this kind, however, must be expected, as long as the duties of the art are permitted to be exercised by every one who is disposed to assume them.

A little further on, Dr. K. makes the following judicious remarks—"A dentist who is competent to the discharge of his duties will not only supply the specific loss, or remedy the defect; but he will detect and remove the latent evil. It is as much a part of his duty to see that the cause which has occasioned the particular loss or injury brought under his notice, shall not continue its destructive operation, as it is to supply the deficiency."

Indeed, the restoration of the natural teeth to health, and such other parts of the mouth as may be in a morbid condition, is of much greater consequence, than the insertion of artificial teeth. The first care, therefore, of the dentist should be directed to this object.

Again, the author pertinently observes—"It is to be regretted, that dental surgery, as a branch of the healing art, is yet a very obscure science; and, while it is, at all events—not less intricate and abstruse than any other of its branches, it is by far the least understood by medical men, as well as by the public at large. It is also deprived of every protection by the medical or surgical faculty. It is principally from these causes that it has not acquired that importance to which its great difficulties and utility so justly entitle it, while it is overrun by those who degrade the very name of the profession, and endanger the health and comfort of the public."

"These circumstances are particularly productive of the great difficulty existing to the public, in drawing a just distinction between the ignorant and the skilful dentist; and if these facts are duly considered, we can no longer be surprised at the frequent occurrence of individuals, even of the most exalted stations in life, so much deluded by mistaken views and false notions, as to apply to the uneducated practitioner, for the insertion of artificial teeth, at a period when the various diseases of their mouths require the most comprehensive treatment from the *surgeon dentist.*

He concludes the chapter, with a case illustrative of the pernicious effects that result from the employment of badly constructed artificial teeth and the advantages that are derived from them when properly applied. The subject of the case was 55 years of age, and had, from bad treatment of his teeth in early life, and in consequence of the injudicious insertion of a few artificial at this period,—neglecting, at the same time, the treatment necessary to the restoration and preservation of his others, lost, in the course of ten or fifteen years, all he had. His health, in the mean time, had become greatly impaired.

To remedy, as far as possible, the loss of his natural teeth, he had recourse to double sets of artificial; but these, in consequence of being badly contrived, he was unable to wear, with any satisfaction or advantage ; they having been so illy adapted, that his mouth was kept in a constant state of irritation by them.

Loosing confidence in his dentist, he at length applied to Dr. K. who furnished him with a set properly constructed and adapted, which not only enabled him to masticate with ease, but also restored to his face its original healthy contour, and was instrumental in restoring him his lost vigour and health.

The second chapter treats "*on the difficulties accompanying the insertion of artificial teeth*," and here we find many judicious and correct observations, which, did our space permit, we should like to notice. For want of this, however, we pass on to a brief notice of the third chapter, which is devoted to the consideration of " *the surgical and mechanical principles, for the application of artificial teeth—their indications—the modes and materials best calculated for their preparation and insertion, and the means of their attachment.*"

After a few general introductory remarks, the author proceeds to describe the necessary surgical treatment of the mouth, preparatory to the insertion of artificial teeth, which consists in the removal of all decayed roots, dead teeth and extraneous matter of every kind, whereby the gums or any part of the mouth may be kept in a state of morbid excitement, and the restoration of such teeth as may be permitted to remain without injury to the contiguous parts. " *The indications and counter-indications, for the use of artificial teeth*," are next considered, and here he says,— " A correct decicision for the application of artificial teeth, is frequently dependent on very deliberate consideration, which can be estimated only by a perfect knowledge, *founded* on considerable experience and good judgement, of all the changes and effects which are the result of time, age, and mastication, as well as of the diseases, *and the natural curative powers of the teeth*,* and of the parts in any way related to them." Again he observes, " The use of one or more artificial teeth, is properly indicated, and must be useful and necessary, if they can be applied, without bearing too much upon the remaining teeth ; and if they can be rendered an assistance in mastication, pronunciation, or the improvement of appearance." Under other circumstances we are told that they are never indicated.

Speaking of the materials proper for artificial teeth, Doct. Koecker says, " the only kind of artificial teeth, and the materials for their preparation, that I have used, and use at present, are the teeth of the sea-horse human teeth, and single mineral ro terro-metallic teeth, mounted in various ways upon no other metal than gold or platina.

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* Without for a moment questioning the vitality of the teeth, and that they are supplied with blood vessels, nerves, &c., facts that have long since been fully established, we cannot subscribe to the doctrine, that these organs are endowed with *restorative powers*, as is evidently implied by the expression,—" *natural curative powers of the teeth.*"

As it regards the use of the sea-horse teeth for the construction of artificial, although recommended and used by many of our most distinguished practitioners, they are in our opinion exceedingly objectionable Our reasons for opposing the use of this material for artificial teeth have been given at length in another place,* it is unnecessary, therefore, to recapitulate them.

Adverting to the manufacture of porcelain teeth in blocks, Dr K. thus correctly remarks, "repeated attemps have been made in Paris, London and Philadelphia, to render such preparations more perfect; but success, I fear, must be considered hopeless, from the simple fact that it would be founded on principles contrary to the laws of chemistry; for such whole pieces being made of a soft paste, which is afterwards baked in the oven by a similar process to the manufacture of china, they are necessarily exposed to the changes in size and form which the heat produces."

From this it will be seen, that it is next to impossible, that a series of this description of teeth can be made to fit with exactness to the inequalities of the parts upon which they must rest.

This chapter is concluded with a few appropriate remarks "*on the principles for constructing, and the means for attaching artificial teeth.*"

The manner of preparing and inserting, by means of plate, single artificial teeth, constitutes the subject of the next, or fourth chapter, illustrated with cases and plates, as have been the preceding ones. Passing from this to the fifth chaptor, the insertion of sets of two or more teeth are there treated of, interspersed, as before, with illustrative and explanatory cases and plates. In the chapter following, the consideration of sets "*embracing a considerable part or the whole of the upper jaw,*" engages the author's attention. Succeeding to this, is one descriptive of "*the principles for preparing and inserting double sets,*" but we cannot allow ourselves to pass thus hastily over these parts of the work without observing that Doctor Koecker evinces a most thorough and perfect knowledge of the several branches of the subject embraced within them.

The pivoting method of inserting artificial teeth next engages his attention; and here, I would observe, that while many of his views, in regard to the manner of their application and utility are correct, there are others that are evidently erroneous. For example—speaking of the insertion of artificial teeth by this method, he says it is "*always attended with more or less irritation.*" Now that this is very frequently the case, we do not deny—but that it is not *always*, hundreds of cases might be adduced to prove; but it is a method of insertion, I am free to admit which, as Dr. K. correctly observes "requires great caution. When properly done however, and upon a healthy root, I have no hesitation in saying that it is one of the best and most satisfactory methods that has ever been adopted.

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* See Dental Art, Practical Treatise on Dental Surgery.

and clear of the insuperable objections which attach to it. As Mr. Shepherd truly observes, much the larger number of keys now in use are grossly disproportioned—the fulcrum being too long. And it is a fact equally true, that, however just the proportions may be—however well adapted the hook may be to the fulcrum—or whatever shape the latter may possess—the only attainable object in its application is, a powerful rotary motion; and this only by exposing the gums and alveoli to greater or less injury as the circumstances of the case may be. If the shape and situations of the fangs be favourable, that is, if they be straight, and if the circumference of the neck of the tooth be equal or greater than that of the fangs at their extremities, extraction may evidently be effected, without serious injury or inconvenience to the patient. But unfortunately for the advocates of this instrument, those are things without the range of their vision; and it but too often remains (when too late to avoid or repair the injury) for the direful consequences of an ineffectual operation, or dangerous fracture, to teach the operator—what? that the key, though an excellent one in many instances, was not adapted to the *particular* case. The frequency of those particular occurrences, I shall leave to be determined by those in the habit of generally using the instrument. But we are here met by being told that wherever the fangs diverge too much to render their removal with the key safe, that we may first give it a trial, and when such indications occur as to render its continued application imprudent and dangerous, that we must then have recourse to the forceps. And I would here ask, and ask emphatically, what are those indications, and when do they develope themselves? It is after we have exposed those who have committed themselves to our care, and confided in our skill, to the most imminent danger: when some severe contusion, or violent concussion discloses the extent of that unnecessary injury, which no man of *proper feelings* would inflict. And we are then to have recourse to the forceps. Strange logic, indeed! Use an inferior instrument to effect what its superior cannot accomplish. Away with such prevarication. A conscious superiority of the forceps *will*, under such circumstances, force itself upon individuals whose prejudices will ordinarily prohibit their employment. But I have gone ahead of my subject. I proposed noticing the structure and application of the Key. With regard to the shape and proportions, I think Mr. Shepherd's views correct, because the same object is attainable with the small round fulcrum as it is with one of greater dimensions; and the lacerations and contusions incident to the use of this instrument are consequently not so extensive with the one as the other. But, as I have before said, let the shape and size of the fulcrum and hook be what they may, the only attainable object is a powerful rotary motion, the gums and alveoli being the basis of the fulcrum. And unless they be sufficiently firm to sustain the quantum of force requisite to break up the attachment of the teeth to their alveolar parietes, and for their removal (in only one circumscribed direction,) a contusion or fracture is the unavoidable result, to a greater or less degree. But we are led to infer that Mr. Shepherd's Key will not slip down or rest upon the gum, but that it will remain on a line with its termination. Yet he tells us that there are some cases in which it is preferable to any instrument that he has ever seen. As he does not specify those instances, we are to infer, that he alludes to those cases in which the teeth have lost so much of their substance, on one of their sides, as to afford no hold for the beak of the forcep, and in which a hold is afforded strong enough on the other side for their removal with the key. Now, according to Mr. Shepherd's own shewing, no properly constructed key will rest upon the gums, nor will any man of *proper feeling* expose so highly sensitive a structure as the inflamed gums to the painful lacerations or contusions which he admits will result from the use of a disproportioned instrument. But where now do we find his fulcrum? against the tooth on a line with the termination of the gum? Oh, no—that portion of the tooth is gone; enough is not even left to be embraced by the forceps. Where then—where can or does it rest but upon the gum and alveolar processes, where it always does? For, adjust it as you may, in the effort to extract, the fulcrum will always encroach to a greater or less extent upon them, but in this instance the pressure is all concentrated immediately upon them. And this is an instance in which the superiority of the key is demonstrated. Another sage and philosophical deduction! The subject here resolves itself into one proposition, whether it be not more in accordance with the principles of correct surgery, and whether it will not be contributing in a much greater degree, to the comfort of those who seek our professional aid, to remove with a sharp and well tempered instrument a small portion of the gum, together with that attenuated edge of the alveolus which is so soon taken up by the absorbents, thereby affording ample hold for a certain and safe application of the forceps, than to expose these highly sensitive parts to the pressure requisite for extraction—when too, that force is so precariously applied. That the former of these will be sustained, not only by theoretical investigation, but by practical experience, is a fact of which I entertain not a doubt. Conceiving it unnecessary to notice further this part of the subject, we will now notice the advantages of properly constructed forceps. It may not be amiss for me here to remark, that most of the forceps hitherto used were as defective as the Key, noticed by Mr. Shepherd. Their dimensions being better adapted to a smithery than to the delicate organs of the mouth. But it is with the most triumphant gratification, that, in lieu of those mis-shaped and unwieldy instruments, we can now call the attention of the profession to the conjoined production of Cartwright and Snell, and of the ingenious and accomplished Dr. Flagg. Yet important and beneficial as have been the improvements of those gentlemen, it is to be regretted, that a large number of the forceps now in use, are but illy adapted to the purposes which they should subserve. And I must here remark, that the fault lies at the operator's door—careless indifference or confidence in the capacity and disposition of the manufacturer, to turn out a perfectly finished and well adapted instrument, has perhaps resulted in greater injury both to the profession and its patrons, than most persons are aware of. Snell never uttered a more important truth, than when he said, that all operators should pay the most minute attention to the construction of their forceps, and themselves do, what no instrument maker ever would, viz: render them exactly what they should be. Most of the forceps now in use are not sufficiently hollowed out in the inner surface of their beaks, consequently a firm hold cannot be taken upon the necks of the teeth, and so much pressure is applied to their dilapidated crowns in the effort to extract, as to crush them without effecting the object desired. Properly constructed forceps should have their beaks so hollowed out by the file, as to fit the crown, and at the same time to embrace firmly the neck of the tooth. The instrument may then be applied, without the danger of crushing, and a much more effectual hold be taken. So much for the construction of the forceps—now for their application—their practical superiority. In sustaining my position, it becomes necessary for me to notice the irregularities of the shape, size, and direction which the fangs of the teeth take in their growth. By a law of the economy, the teeth have allotted for their support, a certain number of fangs, to occupy certain positions. Yet it is an every day occurrence, to witness departures from that law, in the one instance, as well as in the other; some of them being short, others long, some straight, others crooked, some converge and others as if to exhibit the caprices of nature, diverge so much as to occasionally render their safe removal, an operation of great difficulty. Then to meet and surmount the difficulties which such anomalies present, would common sense, would a knowledge of those diversities, or rather the mystery with which they are shrouded, arm us with an instrument by which these ends might be accomplished, only under favorable circumstances, with ease and safety, or would they place in our hands a variety of instruments, the construction of which would render them applicable to any and every anomaly, which might present itself! But to be more practical, let us again take a cursory glance at the application of the two instruments. The one I have partially noticed, and would only here add, that however dissimilar the circumstances, the *modus operandi* is in all instances the same. The only control the operator can exercise, is in adjusting the fulcrum on the inner and outer sides, and this advantage is of so little consequence, that it is even a controverted point which of the sides is most proper. With the other a firm and effectual hold may be taken upon any tooth which can be removed at all, without incurring the danger of either bruising or lacerating the gums, and the application of force be precisely suited to the circumstances, at the same time, lever power is afforded sufficiently great for the safe removal of any tooth. We deem it here a work of supererogation to say more, all we ask is an impartial and unprejudiced comparison of the instruments, in their most perfect state. Let their application and the result be scrutinized. That much I ask, and that is all. Lastly: Should the use of an instruments be perpetuated, when its place may be supplied by one possessing all its desirable qualities and clear of its objectionable ones? That this is practicable we think we have shewn. That it is an infinitely more painful instrument than the forceps is a fact sustained by reason, and attested by the most skilful and experienced surgeons of the present day. Why is it that we have seen evinced so much aversion to the operation of extraction? and why is it that we see this aversion gradually subsiding? The query is easily answered. The injuries resulting from the use of the Turnkey originated in a great measure the one, and its partial disuse has contributed to the other. But, as Mr. Shepherd truly observes, the objects are to remove a tooth with facility, and at the same time to avoid unnecessary pain; and he who has the ability to accomplish this object with the key ought not to exchange it for any instrument. But *who* has that ability? If any there be, the number must indeed be a limited one, for we are told by one eminent, and no doubt deservedly so, that even now (in the blaze of the nineteenth century, when the arts and sciences have attained to their greatest perfection,) few of the great number, exercising the duties of dental surgery, either know its use or understand its application. Then, I contend, that an instrument so mysterious in its use as to baffle the intelligence and skill of the generality of dentists of the present day, should be rather generally abandoned than recommended. Let the few who possess that ability use it for their own, and the benefit of the community: it is their prerogative, their duty to do it. But arm not the mass with engines of pain and send them out upon the world to perpetrate their mal-practices for the good a few may accomplish. Finally, I beg leave to say, that we are, according to the dictates of our best judgment, called upon by the interests of the profession,—by the laws of humanity,—by every principle which can actuate a philanthropic, a generous and dignified profession, to abandon so prolific a source of injury to the community and discredit to ourselves. In conclusion, I would remark, that in offering the following opinions to the profession, I have been actuated by no desire of bringing myself before the public or of getting up an unpleasant controversy with any one—my object being solely to aid in the investigation of truth. Differing with Mr. Shepherd widely as I do, for him and his opinions I entertain the most profound respect. It is my disposition to allow to him the same liberty of thought, and freedom of speech, which I think proper to exercise myself. As I have before remarked, a controversy is not sought. Yet, whenever I may deem it either due to myself, or the cause of science, I shall not be backward in giving utterance to such sentiments and opinions as I may consider fit and proper. W. W. H. THACKSTON.

Farmville, Dec. the 28th, 1840.

IMPORTANT ANNOUNCEMENT.

Having been informed by the Editors of this Journal, that John Trenor, M. D. of this city, has so far misinterpreted the Secretary's minutes of the proceedings of the American Society of Dental Surgeons, published in the last number of this work, as to understand that he is therein declared to have been *personally present* at the first meeting of said society;—this is to inform our numerous readers and all whom it may concern, agreeably with Doctor Trenor's request, that I am as happy to state, as he possibly can be to have it known, that he was not *personally* present on that occasion.

SOLYMAN BROWN,

Recording Secretary, No. 13 *Park Place, New-York.*

January 15*th*, 1841.

INFORMATION

Concerning the American Society of Dental Surgeons.

[BY SOLYMAN BROWN, M. D. SECRETARY.]

Since the issue of the double number of this journal, containing extracts from the minutes of the first meeting of the Society, the Secretary has been repeatedly interrogated, both verbally and by letter, as to the prospects and designs of this extensive professional association in the United States. He has replied as fully and promptly as circumstances would permit, to all these inquiries, so far as he has been made acquainted with the views and intentions of the pricipal agents in the great work of organized reform in that department of surgical practice which falls exclusively to the lot of the surgeon dentist. But he has found it impossible to exhibit the subject in its various aspects; either in the form of correspondence by letter, or in occasional conversations; and he has, therefore, consented to devote a few pages of the present number of the journal to this important topic.

For the purpose of imparting to the subject as much arrangement as the nature of the case will admit, it will be well to consider it under the two following heads:—*The objects to be attained—and the means of their attainment.*

Among the primary objects kept steadily in view by the projector of this society and his professional coadjutors, may be alledged—first:—THE PUBLIC GOOD, resulting from the united efforts of the most distinguished and enterprizing dental practitioners in the United States, aided by those of other countries, in settling the best methods of practice in all forms of dental disease.

Under this head of our subject, will be classed the effort to collect the scattered fragments of knowledge in relation to diseases of the teeth—their causes and remedies—into the form of a SCIENCE.

How much soever may be done by isolated individual effort to acquire personal distinction and emolument, benefitting a narrow circle of patients, the true philosopher and genuine philanthropist embraces within the scope of his vision a wider horizon. Leaping with benevolent dexterity from the circle of selfishness, he stands erect in the unlimited dominions of Truth and Charity, performing the appointed duties of his sublunary existence for the benefit of mankind. Not so with those who contract themselves like the tortoise within their own shells, and make no excursions except for booty.

In this remarkable age, where all the truly magnificent purposes of man are effected by combinations of individuals, acting with united effort for the production of grand results, it is really surprising to hear men of moderate pretensions to wisdom, talking of the superior advantages of private and individual exertions in the cause of dental science: and yet, perhaps, there always will be persons in every age, who, like the Sicilian mechanist and geometer, are waiting till they find a fulcrum upon which they can place a lever that will enable them by their own unassisted power to move the world.

A *second* object of the projectors of this society, is to embody all regular and worthy dental practitioners throughout the United States, in a properly organized fraternal association for the suppression of quackery and imposture.

It will not be denied that there has long been, and still is, abundant necessity for such a consummation. What profession was ever more disgraced by impudent pretenders, than that of Dentistry? Medicine and Surgery have had some barriers against the inroads of those brainless barbarians who would mercilessly overrun the fair dominions of the healing art; but in what part of our country was dentistry ever protected by law, or its charlatans resisted by combination? Is it not time then, that all those honourable and capable men who have embraced this department of surgery as their profession for life, should unite to expel these barbarous Canaanites from their desecrated borders?

To this end it will be the constant effort of the members of the American Society of Dental Surgeons to bring within their fraternity, all those deserving individuals in every section of our country, who are desirous of introducing true theory and honourable practice into the profession.

No individual who is worthy of its patronage, will be excluded from the fellowship of this society, provided the proper efforts be made, either by himself or his friends, to make known to the Executive Committee, the character of his claims.

It will be evident, on a moment's reflection, that the attainment of these important objects,—namely; the arrangement of dental knowledge into scientific form, and the exclusion of quackery as far as practicable from the ranks of the profession, pre-supposes many minor objects of very great importance.

Among these is—first: A COMMUNITY OF KNOWLEDGE. Empyricism can effect but little in imposing on the credulity of the public without the aid of its secret nostrums and infallible specifics; and while the public themselves allow more than one half the columns of every newspaper of our country to be filled with the advertisements of quack doctors and quack dentists, emblazoning in staring capitals the virtues of mysterious drugs and wonderful operations, to which it would be barbarous to subject the constitution of a dog, can it be reasonably expected that regular practitioners, in any department of the healing art, will be properly respected? But, it will be asked, what is the remedy? and we shall be told that mankind are so fond of being deceived by cunning and specious appearances that reason never will be their conductor. To this I answer, throw open wide the gates of public instruction. Labour to make knowledge as free and as universal as the atmosphere which we breathe. Send the school master still more generally abroad in the land; but more especially, let medical men and their public lecturers expose the folly and the madness of entrusting human life to the secret spells of alchemy and witchcraft. The truth is, the people must be enlightened on the subject of their physical organization, and the best modes of avoiding disease. The laws of health must be extensively promulgated. But in an especial manner, the professor of the healing art must make common stock of all the valuable facts which have been accumulated by experience, or unveiled by discovery. How unprofessional and malevolent would be the conduct of the selfish churl who could wish to conceal knowledge that might be useful to his race! The very fact of concealment should instantly deprive him of the confidence of mankind. And yet how frequently do we see the easily deluded multitude, thronging in herds the door of the empyric who pretends to possess some secret known only to himself! How much better would it be to base professional character upon a faithful application of known principles, than to labour to dupe the ignorant by the trickery of mysticism!

In the second place:—The encouragement of genuine merit and well intended effort in the cause of humanity, will have the effect of sustaining a respectable class of dental practitioners, to whom alone the public will, in time, learn to look for relief in dental diseases. Hitherto, community has been almost wholly unimformed as to the comparative competency of the several classes of professed surgeon dentists. This society will have power to establish lines of demarkation between the truly competent and the mere pretenders to dental knowledge. Such as deserve support will be sustained and encouraged by the combined influence of the entire dental association in the United States, insomuch that the simple fact of membership will constitute a passport to public favour.

But it must of necessity require some little time before the necessary information can be obtained by the Executive Committee, to enable them to recommend to the society, every individual in the profession, who may deserve its protection and support. But as soon as this object can be fully effected, those who have nothing to recommend them but the arts of quackery and the vices which should disgrace them, will be compelled to feed upon the gullibility of that portion of society who prefer ignorance to knowledge, and vice to virtue.

In the third place:—the elevation of the profession from the condition of scattered individuals to the rank of an organized association, recognized by the laws of the land, and acknowledged by similar bodies among the other professions, will be one of the earliest effects of the formation of the American Society of Dental Surgeons.

In the fourth place: — I may allege, with great propriety, *the cultivation of the social virtues*, and their legitimate pleasures, among the intelligent members of a widely extended profession, as by no means an unimportant effect of the organization of this society.

It will scarcely be doubted, much less denied, that objects like these are worthy of the most ardent desire, and the most vigorous prosecution. The *means*, therefore, for their attainment are well deserving our deliberate attention.

First—then, it may be observed, that annual meetings of the society will be holden in some of our larger cities, which it will be practicable for many of the members to attend, for the purpose of imparting and receiving knowledge necessary to professional eminence and usefulness. An interchange of views and opinions will be a distinguishing feature of these assemblies, and result in the greatest good to community at large.

Secondly:—At these annual meetings, written dissertations will be read by members previously appointed to that duty, on subjects of acknowledged interest to the profession. Besides these, an opening address is provided for by the By Laws, in addition to other sources of rational amusement and instruction.

Thirdly:—New associates will be annually admitted to the society, from among those younger members of the profession who have qualified themselves to stand in the places of those who have been removed from its ranks by death or otherwise. Indeed, the natural augmentation of the population of these States, from year to year, will demand large accessions to the number of dental operators, in order to keep pace with the wants of society.

Fourthly:—A system of popular Essays, in the form of small tracts, are in progress of active preparation, twelve of which are expected to be ready for publication and delivery by the time of the next annual meeting of the society. These brief essays, on the most important topics connected with the diseases of the teeth, are designed to be distributed by the members of the society among their patients. They are, therefore, intended to instruct, not so much the profession as the community at large, on the several subjects of which they treat. These tracts, it is hoped, will be issued at a cheap rate and in large quantities to meet the general demand.

Fifthly:—The subject of conferring the degree of dental Surgery, has engaged the early attention of the society, and the committee appointed to prepare the Diploma, and its appropriate seal, has already nearly completed its task. Every member of the society, honorary as well as active, will be entitled to a Diploma by paying into the treasury a stipulated sum, to be used for the benefit of the society. Although the simple act of conferring a scientific degree, does not of itself impart any additional knowledge, it may be made, at least, an evidence of knowledge already acquired by theory and confirmed by practice.

Sixthly:—The encouragement of Dental Colleges like that in successful operation at Baltimore, is a favourite object of this society, considered as one of the means of accomplishing the great objects of the association. Whether the society will organize a college of its own, or merely encourage the formation of several in various sections of the union, remains yet to be determined. There cannot exist a doubt, that the constant demand for properly educated dental practitioners in twenty-six states, besides several territories soon to become states, will require more than one dental college as soon as this mode of professional education shall be generally pursued. When we reflect that the necessities of community will require at least one dentist to every four physicians throughout the land, in order to counteract the luxurious habits, the hereditary tendencies, and the inveterate negligence of the inhabitants on the score of cleanliness of the teeth, we arrive at the necessary conclusion that schools of dental instruction will be demanded in the ratio of at least one to four, compared with those of general surgery and medicine.

Seventhly. The dental magazine already established, being the first publication of the kind in any age or country, so far as history informs us, has received the decided approbation of the Society, with the assurance of its constant support. Although the conductors and original projectors of the American Journal of Dental Science, were quite willing to resign the publication into the hands of the society, that body was disposed to decline the transfer, believing that the periodical would be best conducted on its present plan, modified perhaps, on the appearance of the second volume, so as to assume the form of a quarterly, instead of a monthly publication.

By the time of the second annual meeting of the Society, in August next, much progress will be made towards bringing the association into regular form, provided the Agent appointed to make application for a charter to the Legislature of the State of New York, at its ensuing Session, shall meet with desired success. Indeed, so few, and so reasonable are the powers and privileges requested in this charter, that the success of the application is scarcely problematical. By the period abovementioned, the Diploma will be ready for its seal, signature, and distribution. Twelve popular Essays, on very important topics, will be ready for distribution among the members, and, indeed, several of them will be put to press under the sanction and authority of the Publishing Committee before that period. Many additional members will be reported by the Executive Committee whose duty it is to examine the qualification and claims of all individuals of the profession proposed or applying for admission.

Moreover, the Examining Committee will be ready at the next meeting to investigate the qualifications of students from the offices of private instructors, who shall be presented for examination.

The accomplishment of all these important objects, in the compass of a single year, will require the faithful attention of the officers, committees and active members of the society during the few remaining months :—and it is confidently believed that after the next annual meeting the association will be in full and successful operation in all departments of its use.

Perhaps some of the readers of the Journal are ready to inquire :—" What are the essential qualifications for membership in the American Society of Dental Surgeons."

To this question the secretary most cheerfully responds, in conformity to the general sentiments freely expressed by the members in attendance at the time of the formation of the society, and the adoption of its constitution.

And first:—The original founders of the society were unanimous in the resolution to admit knowingly no individual as a member, with whom they could not cheerfully associate as a gentleman of unimpeached moral character.

In the dental profession, as in all others, there are men who scruple not to trample openly upon the received laws of order, morality and religion; and inheriting as they do the contempt of mankind, it cannot be reasonably expected that gentlemen, to whom these laws are sacred, will open their arms to so foul an embrace. Such men, knowing as they must their own character, will spare themselves labor and disappointment by neglecting to present themselves at the doors of the society. They may rely upon it, that there are men within its walls so resolute and fearless, and so determined in regard to the character of their associates, that not even the jeopardy of their lives would deter them from doing all in their power consistently with honor, to exclude the base and the profligate from any association to which themselves may belong.

In the second place:—Unprofessional practices and notorious acts of quackery, will exclude their author from a seat in the society.

It is thus that the profession at large are determined to come to the aid of that portion of the community who have been unwittingly the dupes of shameless imposture. If the public will co-operate wisely with this society, there will be no difficulty in thoroughly excluding dental empiricism from the land. But as in the case of the other branches of the healing art, surgery and medicine, there will no doubt, always be found a sufficient number of patients who will adhere to the folly of preferring quacks to regular and honourable practitioners, because perhaps, their imaginations are prone to be delighted with the glaring fictions of those empirical advertisements with which the columns of almost every newspaper in the land are so largely graced.

But thus far I have spoken only of *disqualifications*, which has prepared the way for answering directly the question before us—" What are the essential qualifications for membership in the American Society of Dental Surgeons?"

Respectable talents:—creditable acquirements:—professional integrity;—and a good moral character. These four requisites are esteemed indispensable to a useful performance of the difficult and delicate duties of the

INTRODUCTORY LECTURE,

Delivered before the Class of the Baltimore College of Dental Surgery, at the opening of its first Session, by CHAPIN A. HARRIS, M. D., D. D. S., *Professor of Practical Dentistry; furnished for the American Journal of Dental Science, at the request of the Publishing Committee.*

In entering upon the duties of the chair, to which I have been called, in the "Baltimore College of Dental Surgery," allow me to observe, that howsoever much of interest or curiosity the establishment of this institution—the first of the kind that has ever existed, either in this or any other country—may have awakened, it constitutes an era in the history of a most useful and valuable department of medicine; and if it be properly conducted, cannot be otherwise than productive of great good. Practiced as this branch of surgery too frequently has been, and in many instances even is at the present day, by individuals not having been specially educated for it, it is little better than a wide spread system of *quackery;* and that under such circumstances unfavourable results should often be experienced, is most reasonable to suppose. Few facilities have hitherto existed for obtaining the necessary preparatory instruction, and it has only been by unwearied industry, and patient and persevering toil, that those who have obtained respectability and usefulness in the profession, acquired the information that enabled them to do it. But of the number now engaged in its practice, few comparatively, have thought it necessary, or had the ambition to attempt to surmount the obstacles that presented to the acquisition of a thorough and scientific knowledge of the art. Rather than do this, the majority have been content to exercise its duties the best way they could—seeming to care little, whether the principles upon which they practiced were correct, or the services they rendered their patients of value or not, but depending more, for public notoriety and favour, upon artful management, than skill; they, as in too many instances has been the case, have sought the former to the neglect of the latter.

No credential or evidence of competency having been looked for or required, the profession has become crowded with individuals, ignorant alike of its theory and practice; and hence its character for respectability and usefulness has suffered in public estimation, and a reproach been brought upon it, which it would not otherwise have deserved.

The community at present is unable to discriminate between the well-educated and skilful practitioner, and the merest pretender—and until it shall be able to do this, more or less of the reproach that is brought upon the pursuit by the latter, will be visited upon the former. Often has the cheek of the honorable high-minded practitioner been caused to blush with shame on account of the mal-practice of the ignorant and unscrupulous of his professional brethren—often have his feelings suffered the deepest and most painful mortification at beholding injuries that had been inflicted on the teeth of individuals, who, in a spirit of the most entire confidence, had submitted them to the care of those not properly skilled in the treatment of the maladies of these organs.

Accessible as has been the calling of the dentist to all that were disposed to engage in it, and that too, without regard to qualification, it has been resorted to by the ignorant and illiterate, and, I am sorry to say, in too many instances, by unprincipled individuals, until it now numbers in the United States about twelve hundred, and of which, I think it may be safely asserted, not more than one-sixth, possess any just claims to a correct or thorough knowledge of the pursuit. That under such circumstances, it should occupy a place in the world's estimation, inferior to that to which it would otherwise be entitled, is not a subject of wonder.

Gladly would I draw a veil of secrecy over these things, but I feel myself bound in justice to the better-informed of the profession, to the public and to my own reputation, to denounce the empiricisms that have and do still exist in this department of medicine. In fact, so notorious have they become, that they are more or less familiar to all.

Of the qualifications necessary to be possessed by a dental practitioner, and the time required for their acquisition, few seem to be aware. On this subject an erroneous opinion seems pretty generally to prevail. A little mechanical tact, or dexterity, is thought by some, to be all that is requisite to a practitioner of dental surgery, and that this could be obtained in, at most, a few weeks. The prevalence of this belief, has given countenance to the assumption of the profession, by individuals totally disqualified to take upon themselves the exercise of its complicated and difficult duties. But it is to be hoped that the day is not remote, when it will be required of those to whom this department of surgery shall be entrusted, to be educated men, and well instructed in its theoretical and practical principles. Elevate the standard of the qualifications of the dental surgeon to a level with those of the medical practitioner, and the results of his practice will be always beneficial, which, at present are frequently the reverse. Require of the practitioner of dental surgery to be educated in the collateral sciences of anatomy and physiology, surgery, pathology and therapeutics, and the sphere of his usefulness and his respectability will be increased. Require of him to be thus qualified, and he will be able to contribute to the advancement and dignity of his calling, and by a zealous devotion to it, he will soon arrive at an excellence, to which, heretofore, but few comparatively, have attained, and enjoy the high gratification of knowing that he is a benefactor of his fellows.

Those who assume it without the necessary pre-requisite knowledge, ruin hundreds of teeth, before they are able, if indeed they ever are, properly to treat their diseases, and yet, that vast numbers do, every day furnishes the most indubitable evidence. Practice in this department of surgery, unless based upon a correct and thorough knowledge of its principles, can never be beneficial; but, on the contrary, will often increase the evil it is intended to remedy.

This being true, it would be well, were those who sought the services of the dentist, always to observe the caution given by Dr. Brown in his "Dentologia."

"Beware of those whom science never taught
The hard but useful drudgery of thought,"

for, it may be safely asserted, that those who have not energy of mind enough to think, or are unwilling to labour for information, can never arrive at much excellence in the pursuit, and are therefore, unworthy of confidence and patronage.

"On just desert let all success attend,
And patient merit never want a friend,"

adds, a little further on, the author from whom I have just quoted. But we might here pause, and ask,—Are confidence and patronage always extended to the deserving? Are the meritorious always prefered to the unmeritorious? Do those who have toiled for years to acquire a knowledge of the profession, that, when they should enter upon its duties, they might be useful to their fellow men, always receive a reward commensurate with their deserts? Proofs to the contrary might be adduced. But, although it often happens, that the ignorant pretender and the pompous charlatan, with their cunning and trickery, and self-urged pretensions, attract for a time the credulous multitude, their fame is rarely of long duration; and it is gratifying to know, that though the man of science and real worth, may be overlooked for a season, it is only he that acquires a reputation that is lasting and respectable.

To a successful practitioner of dental surgery, as I have on another occasion remarked, qualifications of a peculiar kind are requisite,—such as can only be acquired by study, and by witnessing the various and diversified manipulations that pertain to the several branches of the art, and by frequently repeating them under the immediate direction of a competent teacher. There is no branch of medicine or surgery, in which this kind of instruction is more essential than this. The reading of books that treat on the subjects necessary to be understood, though indispensably requisite, can never make an accomplished and skilful dental surgeon. The duties that devolve upon the dentist, will not admit of mediocrity in their exercise. It is therefore requisite that he be acquainted with such branches of knowledge as will enable him to perform them in the most perfect manner.

For example:—the plugging of a tooth is an operation which, unless well executed, instead of being beneficial, will generally accellerate the disease it is intended to arrest. Now, this operation, though purely mechanical, and thought by most persons to be easy of performance, requires a degree of skill, to which comparatively *very few* have been able to attain. That so small a number of those who have taken upon themselves the management of the teeth, should be capable of properly performing it, is greatly to be regretted; for it is one of the most valuable operations that can be performed for the preservation of these organs.—When well performed, and with a suitable substance, it effectually arrests the progress of their decay in the parts of them in which the fillings are placed. If it fails to do this, it is owing to a want of skill on the part of the operator, or to some peculiarity of circumstances, under which the operation is performed. The practice, therefore, should not as is often done, be condemned because of its failure in the hands of individuals unskilled in the business, or the unfavourableness or peculiarity of circumstances under which it may have been performed. Its efficacy has been fully tested. Thousands have experienced the benefits resulting from it, and can testify in its favour. Its value being thus incontestibly established, it might seem unnecessary to dwell on the subject; yet having incidently adverted to it, I would embrace the opportunity to refer briefly to a few of the causes of the want of success that has attended it; and these may be stated in few words.

The first is, imperfect and improper manner of preparing the tooth previously to the introduction of the substance or substances, with which it is intended to be filled; and here I would observe, that unless every particle of disordered bone be removed, and the cavity suitably shaped, however well the balance of the operation be performed, no very favourable or lasting good results can be expected. This part of the process requires not only judgement, but also considerable patience and tact.

The second is, imperfect manner of introducing the substance or substances employed, into the cavity of the tooth ; for, where the cavity is not so filled as to exclude every particle of moisture from the mouth from between the filling and surrounding bone, the progress of the decay, instead of being arrested, will generally be increased, and this is one of the most difficult parts of the operation. The filling to be serviceable, must be impenetrable to the fluids of the mouth, be flush with the surface of the tooth, and possess a high polish.

The third, and last which I propose to notice, is the employment of substances not capable of resisting the action of the fluids of the mouth. The use of such, has been very common, and has done much to bring the practice into disrepute. Gold and platina are the only substances employed for this purpose, capable of resisting the corrosive action of these secretions, when in a vitiated or impure state, and of these, the first is by far the best. There are circumstances, however, under which even tin and lead may be used with, not only impunity, but advantage ; but as these are liable to change, I do not consider their employment advisable under any. Gold may, therefore, be considered as preferable to every other substance ; for, if a tooth be worth filling at all, it is worth being filled in the very best manner, and with the very best material.

But, materials more objectionable than either tin or lead, have been used. An alloy composed of bismuth, tin, and lead, was a few years since, highly recommended. These metals, when combined in proper proportions, fuse at a very low heat; and it was in this state that the alloy was used, but its introduction into a tooth was found to be productive of great pain ; and besides that, when its temperature came down to that of the mouth, it did not fill the cavity—consequently its employment was soon abandoned.

More recently an *amalgam of mercury* and *silver*, has been highly extolled by a few practitioners, both in this and other countries; but by most of those who have had teeth filled with it, bitterly denounced—so that this, like the article last noticed, has nearly gone into disuse. It is certainly one of the most objectionable articles for filling teeth that can be employed, and yet from the wonderful virtues ascribed to this pernicious compound by those who used it, thousands were induced to try its efficacy.

The employment of this article, in the United States, for filling teeth, was first proposed, about five years since, by two celebrated European empirics, whose *harlequinade* in one of our northern cities, will not soon be forgotten by the hundreds, and I might say, thousands, that were attracted by it, and induced into the belief that the extravagant promises of these impudent impostors would be fulfilled. They however paid dear for their credulity, and many will have cause to remember them with sorrow and bitter execration to the latest period of their lives. But no sooner was the imposition discovered, than the indignation of those who had suffered by it was visited upon its authors with such effect that they were compelled to fly with their ill-gotten gain and blasted reputation, for refuge to another land.

Thus was the career of these celebrated mountebanks on this side of the water brought to a close, and it is to be hoped that the notoriety which they here gained may follow them wherever they go, that they may not again be able to impose, in a similar way, on the people of other countries.

With the route of these notorious impostors, it was thought that the use of this deleterious compound, for filling teeth, would be discontinued, but in this, expectation was disappointed. It was soon revived, though under different names from that by which it had before been designated, but so far as has come to my knowledge, the experiment in every instance has resulted in the injury of those who tried it.

Various other articles and preparations have, at different times, been recommended for filling teeth, but none have been found to answer so well as pure gold. In fact, there can be nothing better than this, nor indeed, is any thing better wanted, for when used by a skilful hand, it, in almost every instance, effectually prevents the further decay of the part of the tooth in which it is placed, and this is all that is required. Whenever, therefore, I hear of an individual's advertising that he has discovered or uses something better, I am induced to believe that he is either ignorant of this nice and difficult operation, or wishes to gain a notice to which his skill does not entitle him, and consequently cannot regard him as worthy of confidence. If he is really ignorant, he is not justifiable in asserting that which is not true, and if he is informed on the subject, he acts dishonestly in attempting to deceive, so that in either case he is culpable.

The treatment of superficial or incipient caries on the sides of the teeth that come in contact with each other, by its removal with a file, is a practice, that has been as much, if not more, abused, than that of any deep seated, by its removal and the filling of the cavity; and in consequence, has been thought to be of doubtful efficacy. In fact, it is regarded by very many, as productive of actual injury; but this is owing to its having been entrusted to the hands of individuals unacquainted with the manner in which the operation should be performed. In the filing, as in the plugging of teeth, judgment and skill are required. Unless it be judiciously and correctly done, it will often be followed by injurious instead of beneficial results. The skepticism, therefore, that exists, as to the good effects resulting from the use of the file upon the teeth, is not a matter of surprise.

That the operation does not necessarily cause the teeth upon which it is performed, to decay, has been conclusively evidenced. There are those around us, who have teeth that were filed, five, ten, and even twenty or thirty years ago, that are now perfectly sound. The value of the operation, notwithstanding the bad effects that have resulted from its unskilful performance, is well established. In the treatment of superficial caries, it is often invaluable.

Thus then it is seen, that even this, seemingly the simplest of all the operations of the dentist, cannot with safety be entrusted to one unskilled in the business. The mere passing of a file between the teeth is not all that is requisite. The manner of performing the operation, and the extent to which it should be carried, can only be properly determined by the nature and peculiarity of the decay, the age and temperament of the subject, and the physical structure and constitutional formation of the organs. With these the operator should be acquainted, to enable him to fulfil the indications of each individual case. Without this knowledge, he will be more apt to do injury than good. In short, the treatment of every disease to which the teeth are subject, unless conducted upon correct pathological principles, and by one well exercised in the manipulations pertaining thereto, will, in by far the greater number of instances, result unfavourably, and yet, there are no maladies incident to the body, that can with more certainty be subdued than those that are confided to the dentist.

Many of the diseases that come within his province, result from, or are influenced by an unhealthy action of some other part, and sometimes from a morbid diathesis of the whole organism, and to their successful treatment, reference to these, often becomes necessary. But, if the operator be ignorant of the anatomical structure of the body, and the laws of disease generally, he will be unable to pay that attention to them, which the exercise of the duties of his own particular department, often requires.

In view of these facts, for facts they are, which no one acquainted with the subject will hesitate to acknowledge, the importance of a more thorough and extensive knowledge, than is possessed by a large number of those now engaged in practice, must be very evident.

The preservation of the teeth is a matter of no trifling importance. Upon this depends, to a very considerable extent, the comfort and health of the body; their treatment then, when diseased, should only be submitted to such as are known to be "*au fait*" in the art.

But to proceed,—There is one other operation which, before I dismiss this part of the subject, it may be well to notice. It is the removal of that earthy substance (commonly called tartar) which forms more or less on the teeth of every one, but on some, in much greater abundance than others. In consequence of the imperfect manner in which this is frequently done, many are prejudiced against it. Finding that it re-accumulated, and that they had not derived the advantage from its removal which they had been led to expect, and that decay aftewards showed itself in their teeth that they had not before seen, not a few have been induced to believe, that the operation was not only productive of no advantage, but was attended with injury. Now this may be attributable to two causes. First, to the imperfect removal of the tartar from the teeth: Second, to the want of proper attention by the individuals themselves, to the use of the means necessary to prevent its re-formation.

If any particles be allowed to remain upon the teeth, they will act as nuclei around which it will regather, and besides, they will be productive of irritation to the gums, and prevent them from taking on a healthy action, so that no advantage will have been derived from its partial removal; and in those cases where there is a constitutional tendency of the general system, favouring the formation of this substance, constant attention to the cleanliness of the teeth is necessary to prevent its re-accumulation. In this case, the fault is not with the dentist, for however well he may have performed his duty, a re-deposition will soon take place, unless proper preventive means be frequently and regularly employed, and this can only be done by the patient. The opinion that its removal sometimes causes the teeth to decay, is erroneous. It may expose a decay that previously existed, but is never instrumental in its production. Its presence, by inflaming the gums, and thus causing the fluids of the mouth to become unhealthy, is often an indirect cause of decay to these organs.

Instead then of its removal being an injury, it is, when properly and effectually done, of incalculable advantage. By allowing it to remain upon the teeth, it not unfrequently accumulates to such an extent, as to give to the mouth a most disagreeable appearance, and to the teeth, it is productive of more injury than almost any other cause. Its effects upon the gums and fluids of the mouth, often result in the destruction of the alveoli and the loosening and loss of the teeth.

Besides the actual injury to which it gives rise, the beauty of the teeth is impaired and sometimes wholly destroyed by it; and the prevention of this alone, ought to constitute a sufficient motive for its removal, for there is nothing that contributes more to the agreeableness of the countenance, than a white and clear set of teeth. A beautiful denture constitutes a charm that is excelled only by a rich and well cultivated mind. Neither elegance of dress, nor costly jewels, can supply or compensate its want. These may dazzle the eye, but cannot command the admiration that is elicited by the other.

If then, white and clean teeth are desirable, and there is no one so much wanting in refinement and good taste, as to assert the contrary, the formation of this substance upon them, should never be permitted; but if from neglect, it shall have been allowed to accumulate, no time should be lost in having it removed. The importance of this cannot be too strongly urged. As has been before stated, it is essential to the health, to the appearance and to the preservation of the teeth, and besides, it is essential to the health of every part of the mouth, and to the whole organism.

The preservation of these organs, should be an object of solicitude with every one, and should constitute the first care of the dentist. It is in this that his skill is tested, and his services most valuable. The restoration of a diseased tooth to health, should be a source of much greater gratification to him, than the supplying of the loss of half a dozen with artificials. One good natural tooth, is worth more than a dozen that can be placed in the mouth by art; and yet, there are many who never think of consulting a dentist, except, perhaps, for the extraction of an aching tooth, until the desolating ravages of disease have made such inroads among their teeth as to render the substitution of these latter absolutely necessary. Artificial teeth, it is true, may be so inserted as to answer a most valuable purpose. If composed of proper materials, and applied upon correct principles, they may be worn with comfort, and subserve to a very considerable extent, the purposes of the natural organs; but they can never be made to equal them.

To prepare and insert artificial teeth so as to secure to the wearer all the benefits that can be derived from fictitious organs, though not requiring as much skill, as does the management or treatment of the diseases of the natural, is nevertheless exceedingly difficult, and can only be done by one well educated in the art. A man may be able to execute with accuracy and neatness, any piece of mechanism or apparatus, necessary to supply the loss of a single tooth, or even that of an entire denture, and still be unacquainted with the principles upon which it should be applied. There are no two cases alike, consequently, the rules that should govern the proceedure in one, will not be applicable in another. To a capacity to execute neatly the mechanical parts of the prosthesis, should be superadded, a knowledge of the physiological principles of the art.

Thus it may be seen, that the information necessary to be possessed, even in this department, is considerable; and that a *two weeks' studentship*, as some have supposed, is by no means sufficient for its acquirement.

This branch of the art, however, has arrived at a very high state of perfection. Artificial teeth are now made so as to resemble the natural organs so closely, that when properly inserted, few can discover wherein they differ ; and the advantages that are derived from them, when judiciously applied, are such that persons having once had them, are afterwards unwilling to do without them. It is desirable then, that those who occupy themselves with the prosthesis of these organs, be qualified to effect it in a manner that will secure to those who are so unfortunate as to require artificial teeth, every benefit that can be derived from such substitutes. Indeed, of so frequent occurrence is the loss of the natural teeth, and so much does that of a single one, particularly if it be in the front part of the mouth, impair the beauty of the countenance, and the articulation of the voice, that a resort to the dental surgeon, for artificial teeth, is almost as frequent, as that for the cure of the diseases of the natural ones.

This branch of the art is very ancient. It was practiced in Rome more than two thousand years ago ; but to what perfection cannot well be determined, since all the information that can be gleaned upon the subject, is derived from writers of antiquity, whose province admitted not of any thing more than casual references to it. From them, however, is learned, that it was practiced at that epoch, and that the artificial teeth there used, were formed from bone and ivory. It has only been however, until within the last thirty or forty years, that the prosthesis of the teeth has been very well understood, and the improvements of the last ten or fifteen have probably been greater than those of any other former period. During this time the art has been so much advanced, that it would seem almost impossible to bring it to a much greater state of perfection. Improvements, however, will doubtless continue to be made, both in this and every other branch of the profession. In fact, the efforts that are at this time being made, particularly in this country, by the more reputable of its members, to advance the science, cannot but be fraught with highly beneficial results.

Hitherto, individual exertions, have been relied upon for the advancement of the science, and it is to the efforts of a few, who have devoted themselves to its culture, with a perseverance and zeal, worthy of the highest praise, and more general imitation, that it has arrived at its present state of perfection. But, a new spirit of inquiry is awakened,—combined efforts are being made, to elicit additional light, and disseminate more thorough and general information on the subject.

But although, among the practitioners of dental surgery, there are very many possessed of talents and education, and who, by dint of unwearied industry, have acquired distinguished, and justly-deserved high reputations for skill; yet they, by their individual exertions, have been unable to free the profession from the reproach that has been brought upon it, by the hundreds of ignorant and disqualified individuals, by whom its duties have been and are still exercised. Encouraged, however, by what has been done by associated influence, and free interchange of sentiment, among the practitioners of medicine and surgery, they are beginning to lay aside that selfish ambition, and petty jealousy, which in times past have kept them apart, and are uniting their efforts to raise the standard of professional qualification—hoping thereby to secure for their vocation a confidence and a respectability that it has not hitherto enjoyed. That they may be successful in so commendable an undertaking, should be the ardent desire of every one; yet filled as the ranks of the profession are, with individuals who have never learned the first rudiments of the science, it will doubtless require some time to effect the wished reformation, and will only be accomplished, as they shall be able to fix a line of distinction between the competent and the incompetent. With a view to this and the more rapid improvement of the art, an association has recently been formed in this country under the designation of the "*American Society of Dental Surgeons,*" with such terms of membership as will admit none, except such as are thoroughly qualified to practice the profession. If this feature be carried out, and from its present organization, no fears need be apprehended on the subject; the association will be able to furnish to its members, credentials of competency, that will, at once, command confidence and respect, and at the same time tend to secure the community against the impositions of the unprincipled charlatan and ignorant pretender. In addition to this, it will contribute in an eminent degree, to establish correct and uniform systems of practice throughout the whole country, and thus an almost incalculable amount of good may result from it.

But to Maryland belongs the honor and credit of establishing the first institution that has ever existed, for the education of gentlemen for this particular department of medicine. The Legislature of this State at its last session incorporated a College for this special purpose, and thus, facilities are offered for the acquirement of a knowledge of all the branches of this most valuable art, that have never before existed, and in consequence of which, the majority of those who have assumed its practice, have been compelled to do so without the requisite preparatory qualifications. Had facilities for obtaining the necessary information existed, it is probable that most of those who have thus entered the profession, would have availed themselves of them ; but as there were none, they were obliged to depend upon such instruction as they could procure, but relying principally upon what they should learn from practice. Thus, from year to year have numbers been added to the profession, until its ranks have become crowded with individuals totally disqualified to take upon themselves the exercise of its nice and critical duties.

But a new era has commenced in this department of knowledge, and I am flattered with the belief, that the time is not distant, when it will be expected of the dental surgeon, as it now is of the medical practitioner, that he shall have been regularly educated for the pursuit, before he shall be permitted to engage in it. For a neglect of this, no good excuse can hereafter be offered. The establishment of the institution to which I have just referred, affords opportunity for obtaining instruction in all the branches requisite to an accomplished practitioner ; and it may not be amiss to observe, that, possessed of ample means for doing this, it is the determination of those to whom its duties have been committed, to extend facilities for their acquirement, such as have never before been presented. Aware of the responsibility that rests upon them, the faculty will spare no efforts to make it creditable to the state that created it, and beneficial to the public. Conscious that its claims to respectability and usefulness will depend upon the manner in which they shall discharge their duties, it will be their constant endeavour to impart, not only correct, but thorough theoretical and practical information,—persuaded that without this, it is impossible for any to practice the art with credit to themselves, or for the benefit of their employers, they are resolved to admit none to the honors of the institution except such as possess it. In short, they are determined that no reproach shall rest upon them for fixing a standard of qualification, that shall not at once be respectable, and entitle those coming up to it, to the confidence of an enlightened community. Whether their efforts will be sustained in a manner to justify their continuance, time only can determine. The importance of a knowledge of the subjects proposed to be taught by them, to the dental practioner, would at least, seem to justify an affirmative conclusion, and that their labours will ultimately be crowned with success, they cannot but cherish a confident belief.

That a school, established for the special purpose of teaching a profession whose resources are as frequently called into requisition as those of the dental surgeon, and upon the judicious and correct exercise of whose duties, the comfort and happiness of so many depend, should be suffered to go down, I can hardly suppose. A failure of the experiment, for as yet, it can be regarded as little else, would be a reproach upon the intelligence of our country. Therefore, that it will be sustained, I entertain no scruples. The announcement that was made of its establishment by the Board of Visitors, soon after its organization, was received, by the more intelligent of the profession throughout the United States, in a manner calculated, not only to inspire its friends with confidence, but also that promises perpetuity to it. That it will have many discouragements and difficulties to contend with, is to be expected; yet, if by the persevering exertions of those to whom its manegement has been entrusted, they be eventually overcome, and the objects for which it was created accomplished, they will feel themselves amply rewarded, for the time and labour which they shall have bestowed upon it.

For the friendly feeling that has been manifested towards it by most of the medical faculty of this city, as well as by gentlemen of that profession in other places, and for the flattering notices that have been taken of it by many of the medical and newspaper presses of the country, they not only feel profoundly grateful, but are stimulated by them, to enter upon its duties, with a zeal, which, perhaps they might not otherwise have possessed. And, in entering thus upon their labours, they indulge the hope, that the expectations of its friends will not be altogether disappointed.

In regard to the plan of instruction which it is proposed to pursue, it is only necessary to observe, that, while it will be such as will enable the pupil to become thoroughly grounded in theory, the surgical and mechanical portions of the art will be exhibited in all their minutiæ, and opportunity given to each, of repeating them sufficiently often to become familiarized with, and skilled in the various manipulations pertaining thereto, so that on leaving the school he may not only be a *good theorist*, but a *good practitioner*.

In conclusion, I would address a few words to the gentlemen of the class,—hoping that what I shall say, may not be without some profit to them.

Gentlemen,—the profession for which you are preparing, is honourable; it is useful; it is one that will enable you to be serviceable to your fellows,—to relieve much of human pain, and to mitigate many mortal woes. Though it may not require of you to combat the more violent and aggravated forms of disease that are incident to man, you will have to treat those that demand nearly or quite an equal degree of acumen and skill; and if you would possess these, it will be necessary that you devote yourselves diligently and perseveringly to their acquisition; that you faithfully employ the time that you design appropriating to your studentship, in acquainting yourselves with the structure of the parts implicated in them—their pathology and therapeutical indications. If you would be able to arrest the diseases that come within the province of the profession for which you are preparing, and prevent the various evils that are frequently consequent thereupon, or, in other words, if you would be able to preserve those invaluable organs, the teeth, and thus secure to those by whom you may be consulted, one of the greatest of earthly blessings, a healthy denture, endeavour to attain the knowledge that will enable you to do it.

If you would command respect, and enjoy the confidence of those among whom it may be your lot hereafter respectively to reside, let it be your persevering endeavour to deserve them. Resolve that you will not be satisfied with mere mediocral abilities in the calling for which you are qualifying. Resolve to put forth all your energies for its acquisition, that you may be able to take rank among the most scientific and skilful. If you do not do this, the fault will be your own, and I am sure that your teachers will labour to little purpose in endeavoring to impart instruction to you, unless you strive to profit therefrom. Let one then, who will feel a deep and anxious solicitude for your success, urge you to diligence in the pursuit of the knowledge you are now seeking. Its possession can alone enable you to discharge in a correct and proper manner, the intricate and complicated duties you are preparing to assume. Let then, a pure and high ambition stimulate you to zealous and unwearied exertion, and be assured that you will never be reproached by the future, for time misspent, or for failing to realize to those who shall seek professional aid at your hands, the benefits which the art is capable of bestowing.

ASPHYXIA,

Or the appearances of the Teeth of those who have died from strangulation.

The following is an extract of a letter addressed to Professor Dungleson, at his request, by H. H. Hayden, M. D., of Baltimore. and published in the Encyclopædia of Medicine. It contains some very curious and interesting facts, and is interesting not only in a physiological point of view, but may be highly serviceable in medical jurisprudence.

"In certain varieties of asphyxia, the appearances of the teeth are not only singular, but highly instructive, in a physiological point of view, especially. They are almost uniformly tinged red. If examined immediately after death, they present a deep pink hue; if some time after, the tint is darker. The different shades of colour, however, will generally depend in a great measure, upon the age of the person, and the violence of the death:—for instance, the bony structure of the teeth of young persons is far more transparent and vascular than those of persons advanced in years. These appearances are particularly observable in the teeth of such as have been drowned, and more especially in those that have been hanged. They are, moreover, met with in the teeth of refractory bullocks that have been forcibly drawn into the slaughterhouse, by means of a rope round the neck. My attention was attracted to these and to many other appearances of the teeth about the year 1815; since which time I have observed them in numerous instances, both in human teeth and in those of the bullock.

On examining the teeth for the purpose of ascertaining, if possible, the nature and cause of these appearances, I found, on splitting them open through the roots, or fangs (which ought to be done from the edge of the crown, so as not to touch or disturb the vessels of the tooth,) the whole nervous pulp turgid, almost black, and even surrounded with blood. From this condition of the vessels, one might be led to suppose that the red tint of the teeth was reflected through the bone. But on removing the nerves, I found that the bony substance of the tooth was literally injected with the colouring matter of the blood, and this so effectually as to render every effort to restore it to its natural whiteness, perfectly ineffectual.

In this condition of things, my attention was directed to an examination into the causes of these phenomena, and the following, whether correct or not, is the result at which I arrived. In order perfectly to comprehend the process, it seems necessary to premise, that the nerves, arteries, and veins, which are destined to the teeth, both of man and animals, enter them through a minute orifice or foramen at the extremity of each root, and pass into a bony canal, which enlarges until it terminates in a cavity in the crowns of the teeth. Now, in the act of drowning, I consider that the heart continues to pulsate after the lungs have ceased to play; consequently, the blood is propelled to the head until the vessels are distended, and often ruptured, as is frequently the case with divers who remain long under water, the blood bursting from the eyes, nose, ears, and even from the mouth. In death, by hanging, or sudden strangulation, as in the case of bullocks, the truth of this position is corroborated by the following facts, which, in my mind, put the question beyond the reach of doubt. So soon as the drop falls, and the body is suspended from the gallows, or otherwise, respiration of course ceases. Still the heart continues, though irregularly, its action, the very first effort of which, after the return of blood, by the compression of the jugulars, is checked, is to force the blood into the arteries of the head, and consequently, into those of the teeth. The result is, that the arteries passing through the minute and unyielding foramina of the roots of the teeth, are so dilated, that the nerves and veins are compressed to such a degree that no blood can return by the latter. In the subsequent effort, the vessels are completely injected; and, ultimately, not only the vessels of the teeth are injected, and ruptured, but the bony substance of the teeth, the hardest and most compact in the human body, is penetrated by at least the colouring matter of the blood.

In a letter received from my much respected friend and professional confrere, the late Edward Hudson, Esq., dated Philadelphia, Sept. 11, 1818, he observes:—"In the small box you will find eight very fine teeth if they were not red. I want your opinion of what occasions this redness, premising that the teeth of all drowned persons are so, that I have examined."

In my reply, dated Sept. 26, 1818, I gave him a full explanation of the cause of those appearances, not only in the teeth of drowned persons, but also in the teeth of persons that have been hanged, and in those of bullocks drawn to the slaughter by a rope round the neck, &c., and asked him if I should return the teeth to him. In his letter and answer to me, dated Philadelphia, Jan. 31, 1819, he observes—"I take the present occasion to assure you, that you are very welcome to the teeth I was so fortunate as to send you. They are of use to you, and I have got some useful knowledge by a mere accident."

In 1838, I believe, two coloured persons were executed in this city, the one a male, the other a female; the latter for poisoning the wife of a medical gentleman. These subjects were examined by myself and two other medical gentlemen, after the heads had been in maceration seven weeks. The red appearance was strikingly obvious in all the teeth that were examined.

In the case of a coloured man who was executed in this city, last spring, for the murder of Capt. ——, these appearances of the teeth were equally evinced, and were, on that account, as I was informed, exhibited by Dr. Wm. Baker to his anatomical class."

NEURALGIA FACIALIS.

BY D. S. GRANDIN, M. D.

MESSRS. EDITORS,

As the complaint which is mentioned at the head of this article is one of frequent occurrence and observation, as well as of solicitude in the practice of every dentist, and every physician, permit me to offer a few thoughts upon the treatment of this disease, in *certain cases*, as connected with my own observation and experience.

In the great majority of those cases of this affection to which I now refer, the teeth are, or appear to be involved, and a defective state of a tooth, immediately connected with the painful symptoms, is generally, though not always, found to exist; but not so deeply as to expose the nerve. As there generally appears so immediate a dependence of all the symptoms upon the supposed offending tooth, its removal is not only earnestly desired by the patient, but advised by the dentist, as the only efficacious treatment that can be adopted; particularly, as any operation upon it, with a view to its preservation, has no influence upon the tortures which seem to proceed from it. The tooth has usually the same good and healthy appearance as other teeth in cases where filling is indicated; it likewise may not be at all sensitive upon the application of the instruments for the purpose of examination, or any operation upon the defective part, and the action and pressure upon it may be attended with agreeable sensations, although pressure or concussion is likely to produce pain after the sufferings of the patient have been so protracted as to involve the periosteum.

In July, 1839, I was afflicted with a distressing neuralgia, such as I have described, which deprived me of ease by day and sleep at night. The pain seemed to proceed from the second right inferior bicuspis, shooting to the ear and over the whole side of the face to the top of the head, and causing my right eye and all my teeth to ache. I treated the case as I was accustomed to do patients similarly affected before resorting to extraction. I applied various remedies to the tooth, and lived under the influence of sulphate of morphine for a week; but no sooner had the effects of the anodyne passed away than all my sufferings returned. I called upon two of our most skilful dentists; they expressed but one opinion, and advised extraction. I should have given the same advice to any other person consulting me in a similar case after trying remedies so long as I had done. But determining to avail myself of the full benefit of all that could promise relief, without submitting to the loss of a tooth so valuable, and removing a link in a yet unbroken chain of dental structure, I continued to suffer another week without diminution. Within that time I called upon both my professional friends several times, but unfortunately did not find them at home. My sufferings had now become so intolerable that, in a paroxism of anguish and despair, I seized the forceps and endeavoured to extract the tooth; but not possessing the same command over the instrument that I should have done had any other patient been in my hands, I broke off the crown and left the pulp exposed and projecting above the fang. I seized it with a pair of dissecting forceps and drew it out, but still experienced no alleviation of pain, and again had recourse to morphine to quiet my excited system till the next morning. The ensuing day, standing before a mirror, I examined the stump and the contiguous parts. I found that a very small process of the gum, between the broken tooth and the first molar, folded over the edge of the broken part, upon raising which all my pangs returned. It did not exceed in size the head of a common pin, but was properly, and to all intents, an irritable ulcer, and I proceeded to treat it upon the same principles that I would an irritable ulcer found upon any other part of the body of the same or greater dimensions. I immediately applied potassa to the gum, and destroyed the irritable part. The pain, though exquisite, was far more endurable than the neuralgia, and subsided in half an hour. The neuralgia immediately disappeared and has never returned. On the left side of the under jaw my first molar tooth is decayed in two places; one in the centre, the other in the anterior side. I plugged the centre myself nine years ago. The cavity in the side was plugged by my friend and instructer, Dr. S. S. Fitch, of Philadelphia, in 1834. The filling was taken out of both places three years since, to examine the tooth, and it was refilled by my brother, Wm. E. Grandin, after ascertaining that the cavities had undergone no change—and it is now in as perfect a state of preservation and usefulness as it was the day it was first filled.

In the month of October, 1840, being on a journey, I took a severe cold, one of the effects of which, was a neuralgic affection on the left side of my face, in every respect resembling the case described above. The pain appeared to proceed from the tooth last mentioned. Passing a tooth-pick between the teeth, I detected the same irritability of the intersticial process of the gum next to the decayed tooth as was discovered in the case already recorded. I touched it with caustic potash and obtained the like result. I have been consulted several times since by patients complaining in the same manner where the teeth presented the like appearance to the case first described, or had been filled as in the second, I have pursued the same plan of treatment, and have succeeded in giving them permanent relief without a single instance of failure. There can be no doubt, from the above details, that many teeth are sacrificed that might, without doubt, be preserved, and remain useful for a long period; and it is with a view to promote so desirable an object that I have reported the above cases; for, when not myself only, but others occupying the very highest station in the profession, have erred in making a correct diagnosis in my own case, it is scarcely to be presumed that others have not generally fallen into the same error.

There is no doubt, in my own mind, that the entire extraction of the tooth first mentioned would have resulted in the cure of the neuralgia and the healing of the irritable part; and I believe the removal of the molar tooth in the last mentioned case would have cured the neuralgia; but the only solace I have for the loss of so valuable a tooth, and the destruction of the continuity of the dental arch, is the having discovered a means of preserving the teeth of others in similar cases. Care must be taken to apply only just so much of the caustic as will be sufficient to effect the necessary indication, or a deep injury may be inflicted upon the part, aggravating the already existing symptoms, and requiring a long time to heal. Perhaps the lunar caustic would be equally efficacious, but as I prefer the potash, I have not tried it.

The method I have used of applying the caustic, is to cut a splinter of wood (without regard to the kind), so as to pass it between the teeth, then touch the end of it into the potash, so as to obtain the smallest possible quantity sufficient to produce action enough to be felt, and touch the gum. The immediate and copious flow of saliva will be sufficient to prevent its burning too deep, and in a few minutes the pain subsides.

Those cases of neuralgia depending upon the exposure of the nerve of a tooth, or upon inflammation of the periosteum when the nerve is destroyed, I have not thought proper to bestow a passing notice upon, as they do not come within the range of the present inquiry.

Extract of a Letter from Dr. Harris to the New-York Editor.

Baltimore, Dec. 3, 1840.

MY DEAR SIR,

Knowing the lively interest you take in every thing that tends to the advancement of our favourite science, I embrace the present opportunity to inform you that our *College of Dental Surgery* is now in successful operation. Our class is small, but perhaps as large as we had a right to expect, and is made up of young gentlemen that would do honor to any profession.

My colleague, Dr. Hayden, commenced upon osteology, which he recommended to the class as constituting a subject that should first engage their attention. He has endeavoured to inculcate new views upon this subject, and we believe, not without success. He repudiates all of John Hunter's ideas of bone "nibblers and modelers," with John Bell's bone modelers, the absorbents;—and Haller's notions of arterial action as the agent employed in shaping and forming the cavities in the bones,—and moreover, most of the other theories, which, Meckle says, "are either vague or false."

He asserts, that the formation of all of the osseous tissues, is regulated by a system of immutable laws, known only to Him who created and impressed upon them the indelible marks of his ineffable goodness, wisdom and power.

This position he sustains by referring the whole process of ossification to that period, the parturient state, in which, for nine months, all the phenomena of ossification are carried on, and to a certain extent perfected, without the aid of the exhalents, or absorbents, or the vital forces from which the absorbents, according to Bichat, derive their power.

These views were sustained by facts and illustrations that seemed to set doubt at rest. Yet, lest it might be contended that the vital forces derived from the mother through the medium of the umbilical cord, were sufficient to qualify the absorbents with all their attributes, he appealed to the process of ossification in the oviparous animals, where, during the entire period of incubation, no influence, either direct or indirect, could, by a possibility, have been derived from the parent of the eggs. Yet the whole process of ossification, with the attendant phenomena, were, as shown by striking illustrations, precisely the same, and, apparently regulated by the same laws as that of ossification in all viviparous animals.

The illustrations were the most complete and satisfactory in the bones of the tortoise, or *testudo terrestris major*, which he exhibited.

This is but an imperfect sketch of the Doctor's argument in support of his views on this subject. It was not only able and ingenious, but seemed very conclusive. But with the abilities of Dr. H. you are already acquainted, so that of them it is unnecessary for me to speak. As a theorist and practitioner in our profession, you are aware that he ranks among the very first.

Professor Bond sustains the chair of special pathology and therapeutics in a very able manner. As a teacher, I very much question whether he has any superior. While his manner is easy, and free from every thing like embarrassment, he possesses in an eminent degree, the happy faculty of so impressing what he says upon the minds of his hearers, as not easily to be forgotten.

In his first lecture, he began by defining Life, considered physically, to be the assemblage of effects produced by a given organization:—*Health* to consist in order and regularity in the developement of these effects:—Disease, disorder, or irregularity, in the accomplishment of one or more of them. Physiology had regard to the succession of acts which collectively constituted life. Hygien, to the means by which health may be preserved; and Pathology, to diseases and their cure.

The causes of disease he explained as external and internal. The external, all those morbific causes which are not dependent for their existence upon our organization—internal, such as are engrafted upon our constitution by inheritance, or are produced spontaneously within us by the action of one part of our being upon another, or by the natural decay of organs. Further divisions into local and general—predisposing and exciting—specific, &c.

He then proceeded to consider the agency of the atmosphere in producing disease.

Professor Baxley's first lecture was on the elementary principles of animal organization, and was highly interesting, but of this I have not time to give you even an outline. As a teacher of anatomy, Dr. B. has acquired a justly deserved high reputation, and we were fortunate in obtaining the services of so distinguished a man.

The school having gone into successful operation, there is now no question as to the future. The scheme, at first, was thought by many to be chimerical, and it was believed that the institution would never go into operation. This prevented many residing in remote parts of the country from attending the first course. Indeed, I have received letters from a number since it has commenced, stating their desire to attend, but who were unwilling to incur the expense of coming here until they should ascertain that the school was actually in operation. There will no longer be grounds for such apprehension. The scheme was not projected without counting the cost; the school was chartered by an enlightened legislature, disposed to elevate a useful profession to the rank it should occupy, and rescue it from the hands of charlatans. It is *in being* with a degree of success equalling our most sanguine expectations, and is destined, we do not doubt, to take position among the useful institutions of the country.

DOCTOR CRANE'S LETTER.*

Some person, we know not who, sent us a few weeks since, a New-York newspaper, containing a letter signed J. W. C. This letter, as our readers are, no doubt aware, they having been pretty generally furnished with the paper in which it appeared, asserts that an attack had been made upon its author—*Doctor Crane, Dentist*—by the New-York editor of this journal, in a note appended to an article written by ourself, and that it grew out of a refusal on his part to subscribe to our publication. Doctor Crane unquestionably had a right to refuse to subscribe, and we should not have thought any the less of him for so doing. Had he not been guilty of a most gross and unwarrantable violation of professional courtesy, in charging, not only the gentlemen having the superintendence of this publication in New-York, but also every member of the dental profession, who has not been regularly educated in medicine, with a want of capacity to conduct such a periodical, his name would not have appeared on our pages in the manner in which it did. No importunity of our agent could form a sufficient excuse for such an uncalled-for accusation.

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* It was not my intention to have noticed the allusions made to me, as the New York Editor of the American Journal of Dental Science, by Dr. Crane, in an article published in some of the New York papers, and industriously circulated among Dentists throughout the country ; and should not do so now, but for the purpose of expressing my high appreciation of the feelings which prompted two gentlemen of the profession to take up the matter, and to place the author of those allusions in his own proper attitude.

When one of the papers containing these allusions, was put into my hands, I read what I supposed to be some editorial remarks ; and not having the pleasure of being acquainted with its editor, I immediately inquired of a friend of his, who is also an editor, what I was to understand by this proceedure ; and I was informed that it was not likely the remarks were in reality editorial, but had been published as such things commonly are, by being paid for as advertisements.

The letter signed by J. W. C., I did not read, nor have I read it to this day ; and indeed, did not know until reading the article above, that it contained the remarks quoted by my associate, and by him so justly commented upon.

I would take this occasion of informing E. N. that the reason why his very handsome letter addressed to the Editor of one of our New-York papers, was not published. The letter was sent to me, with the request to know whether I wished that it should be published, to which I replied, that I did not desire any of my acquaintances or friends, to publish anything in my defence ; but that I was rather pleased with the pains which Dr. C. was taking to make known to the public the estimation in which I hold him. The communication of E. N. I have in my possession ; and shall preserve it as a token of respect and esteem, shewn for me personally by its able author ; and the noble and generous sentiments which it expresses throughout, command my warmest admiration.

N. Y. EDITOR.

With Doctor Crane personally, we have no acquaintance, nor were we; until quite recently, aware that there was such a person in existence. We therefore, entertain no ill will against him whatever. He may be all he says he is, and we doubt not that he is a man of some cleverness in his profession, and that no one is more sensible of this than himself; but realy we do not recollect to have ever read a *vainer, more pompous*, or *egotistical* production in our life; and never were we more fully convinced of the truth of the remarks of St. Real, that, "He who speaks of a *doctor* does not always speak of a *learned man*, but only of a man, who ought to be learned," than while perusing it.

We did not at first think it worthy of notice, but coming as it does from so *learned* a source, a brief review of it may not be uninteresting to our readers—especially as in it, are advanced some new and singular doctrines.

In the first place, the doctor complains, that since the expose of his discourteous conduct about dentists who had not received medical educations, by the New-York editor, gentlemen of the profession had been less inclned to extend to him "the hand of fellowship," and, that many of those who had continued friendly to him, "were not considered worthy of an invitation to the late Dental convention,"—himself, "sharing in the exclusion." The first part of this may, for aught we know, be true, and if so, he ought not to complain. He has nobody to blame but himself, and ought not to expect the hand of fellowship to be extended to him by those of his professional brethren whom he had treated with such gross disrespect. But as regards the reason of his not being invited to attend the "late Dental Convention," in common with gentlemen who may have "remained friendly" to him, we can assure Dr. C., and all who may be under the impression which he seems to have taken up, that the expose of his conduct towards the New-York conductors of this periodical, was the cause, is wholly incorrect. The members of that convention, knew of many worthy and respectable dentists whom they would have been glad to have had present, but it was thought that few would be likely to attend until something like a nucleus was formed, or in other words, a society regularly organized, and it was on this account that they were not invited.

Having disposed of this part of the letter, we pass over about one half of the paragraph following, to where the author says, "the last conversation I had with him,"—the New-York editor—"was to instruct him on the vitality of the teeth, and that was not the first time he received instruction from the same source." What *egotism* and *vanity!* We wonder if

Doctor Crane supposes that because Dr. P. did him the *favour* to listen to his views on the vitality of the teeth, or any other subject pertaining to dental science, he received any information of which he was not before possessed, and that too very likely before he (Doctor Crane) had thought about entering the profession? But for his vanity, we should be inclined to doubt it; he however, is so liberally endowed with this, that it would not surprise us if he conceited himself to be the only wise man living.

If it be so, will he give us some information on the vitality of teeth, that is not to be found in all the works written and published on that subject? We shall receive it thankfully, and give him full credit for any new information he may communicate.

After this, he boasts of having given lectures to the New-York Dentists' Society, " and giving *them*,"—we suppose he means its members, though he speaks only of the society—" *many new patterns of instruments*," &c. &c. Again, with the greatest self-gratulation, he says—" They," referring to the society, " *have also taken patterns of my operating Chair, which* I INVENTED *about ten years since; and now he*," meaning Dr. P., " *accuses me of not aiding in the improvement and elevation of the science*." Proceeding with this kind of bombast, he a little further on asks—" *And why have the Medical Students of Crosby-street College invited me to lecture to them on diseases connected with the teeth; and after receiving the lectures gratuitously, sent me business sufficient to pay for a full course!*"

These are truly puzzling questions, and we are certain we do not know why the students of Crosby-street College did all which the Doctor says they did; but if he considered his course of instruction as of much value, and they sent him patients enough to pay for it, we pity them. Good operators can rarely get more than the value of their services, and if Doctor C. can be ranked with this class—and far be it from us to question his claims to skill—he must at any rate be a good *fee-ologist*, to obtain from his patients not only enough to pay him for his services rendered to them, but also, in addition to this, enough to pay him for a full course of lectures. We doubt not that he might do well to deliver a course of lectures on *fee-ology*. That is a department in which a great many are not well informed. We do not ourself profess to be very well versed in it; and should the doctor offer to instruct in this branch, as, by the by, it is a very important one, we might be induced to go on to New-York to avail ourself of the knowledge he must be so eminently qualified to impart on this subject.

Proceeding with his letter, the Doctor in the next place tells us, "*that there are about twenty diseases appertaining to the teeth, which are not investigated by our Medical Faculty in their Lectures.*" Of this we were not before apprized; and although we have read with some attention, the principal works that have been published in England, Ireland, Scotland, France, Germany, and America, on the diseases of the maxillary organs, we do not recollect to have heard that there were that number of diseases that were not treated of by medical Lecturers. A synopsis of them would be highly interesting; and we should be glad if the learned Doctor would favour us with their *nosology.* We feel assured, such a work would be very acceptable to the profession. These diseases not being treated of by medical Lecturers, he says "*The consequence is, the medical man refers his patient to the dentist when such a disease occurs in his practice,*" meaning, we suppose, any of the twenty; "*and, if the dentist has not a medical education, he refers him back to the medical man; and thus the patient falls between them.*" This, we must confess, is a curious kind of logic. If these diseases are not treated on by medical writers or teachers, a medical education could avail the dentist nothing in their treatment; and if he be possessed of knowledge that enables him to do this, he must have obtained it from dental writers, or from the source from whence he received his professional education. It must have constituted a part of this.—If on the other hand, the pathology and therapeutical indications of these diseases, are taught in medical schools, there would be no necessity of the physician's referring patients labouring under any of these maladies, to the dentist. Doctor C. must reason better than this, if he would not have his claims to a superiority of knowledge of the diseases of the buccal and maxillary organs, over many of his brethren, who do not profess to have been regularly educated in medicine, questioned; and others will suppose that there is more of "*shadow,*" than "*substance,*" in his pompous pretensions—his M. D. to the contrary, notwithstanding.

We would not only challenge, but defy, this would be profound Doctor, to give some account of any one of the *twenty diseases* spoken of by him, which was not discovered, described, and successfully treated long before he was born, and consequently, before the world became enlightened by his learning, logic, discoveries and inventions, not one word of either of which have we ever heard from any other source than his own letter now under consideration.

We do not argue against the importance of a knowledge of several of the branches of medicine to a skilful practitioner of dental surgery.—This we know to be essential. Our views upon professional qualifications were given at some length in the third number of this periodical, and to which the note that so much excited Dr. C's ire, was appended.

If there are those who wish to know Dr. P's views on this subject, we would refer them to his chapter on the qualifications of the dentist, published in his treatise on the teeth about twenty years ago; and also to his lecture, delivered before the Society of Dentists, in New-York, on the same subject, published in the 19th number of the United States Medical and Surgical Journal, where the necessity of such knowledge is as strongly urged upon the student as the force of language will permit. For the information of those who have seen the invidious and malicious remarks, so extensively circulated, with the evident design of injuring one who, with those to whom he is professionally known, stands wholly beyond the reach of malice or detraction, I will make a few quotations from the ablest authority in Europe, published twenty years ago, to show that he did obtain that preparatory knowledge, the necessity of which he so earnestly recommends to others; and but a moiety of which have we yet had any proof that Doctor C—— to this day possesses.

When he can furnish to the profession a better system of practice, and carry it out more successfully than Dr. P—— has done, after a thorough course of professional study and practice, his malicious and envious remarks, addressed to his Boston correspondent, may be entitled to some serious consideration; but they certainly will not until then.

"An Essay on the Disorders and Treatment of the Teeth. By Eleazar Parmly, Dentist,"

"The author of this little volume, and his brother now in America, we know to be able and ingenious dentists. The present little volume contains perspicuous directions for the Management of the Teeth, and sensible observations on the causes of their decay."

Medico Chirurgical Journal, Edited by James Johnson, M. D., Physician Extraordinary to His late Majesty the King of England.

"We have much pleasure in announcing a very valuable "Essay on the Disorders and Treatment of the Teeth," from the pen of Mr. Eleazar Parmly, a scientific dentist of St. James's Street, London, which is well calculated to put an end to dentifrice quackery. In this little tract Mr. Parmly very ably points out the several duties of a dentist. The author has visited America and France, to collect information on the treatment of the teeth, and has also attended the practice of the most eminent dentists of London, with the same view; and after giving the different practices a trial, he has detailed those modes of operating in cases of decayed and loose teeth, irregularity in their arrangement, &c., &c., which he is satisfied may be adopted " with prudence and safety."

" We have no hesitation in saying that a perusal of this work will satisfy the reader that it is the production, not only of a skilful dentist, but, what is of no less consequence, an honest man; a man who wishes to communicate the information he has collected at a considerable labour and expense, for the benefit of his fellow creatures."

Medical Review, page 1020. *Edited by R. Reece, M. D., London* 1821.

" The instruments hitherto in use for the extraction of teeth, have, to my apprehension, been deficient of that neatness and convenience for adaptation which every operation on the human frame so justly demands. Besides his finished qualifications as a dentist, therefore, it gives me pleasure to notice the merits of Mr. Eleazar Parmly, in contriving an instrument, admirable for its simplicity, which completely sets aside these obvious disadvantages."

" *View of the Structure, functions, and disorders of the Stomach and Alimentary organs of the human body.*" *By Thomas Hare, F. L. S., &c., Fellow of the Royal College of Surgeons in London*— 1821.

After noticing one other passage in the letter under review, we shall dismiss it. The last paragraph commences by saying, " I hear that a medical society has granted him," Dr. P., " the degree of M. D. From what society he received it I have not learned; but one thing we may rely upon—that it was not granted unsought,* nor on account of his knowledge of medicine; nor of his education; nor of his late operations on the teeth." Now, in all these envious inuendoes, Dr. Crane is mistaken. To our knowledge, the honor was conferred without any knowledge or application of Dr. P's. The degree was conferred by a University: the act was voluntary, and on account of *his* "*knowledge in medicine*," his "*education*," and not only *late*, but operations for the last twenty-four or five years, on the teeth; and three other gentlemen of the Dental profession received a like honor, and for like reasons, from the same University. Being in possession of these facts, we think it no more than right that they should be made public, inasmuch as the remarks of Dr. Crane are calculated to produce a false impression among those with whom the New-York editor of this Journal may not be acquainted. BALT. ED.]

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* If *Doctor* Crane applies this language to me in his letter, and has given his readers to understand that he *guessed* it was so, I will merely remark that he will be obliged to guess again, and write another letter to his highly favoured Boston correspondent, in order to inform him correctly, because he did not, with all his " cuteness," *guess* right. But if, without a *guess*, he declares it to be true, I should myself be guilty of concealing the truth if I did not pronounce it utterly false—never having in my life, sought, solicited or expected the honor so kindly conferred.

Although in our first Medical Colleges and Schools, a Diploma is gained only by young gentlemen of a high order of talent, yet if I had thought the mere possession of one to hang on the wall of my operating room, as *Doctor* C. has done, necessary to secure professional success, I *believe* that I could have obtained one twenty years ago, where, and in the way, the *Doctor* acquired his—judging from the display of science and learning instanced in the above review, that the terms on which Diplomas are there *sometimes* granted must be exceedingly easy, and within the reach of young men of the most meager, as well as those of the highest capacity. N. Y. Editor.

Letter to the Baltimore Editor, from John C. McCabe, of Richmond, Va.

DEAR DOCTOR,

The formation of a Society, similar in its objects to the American College of Dental Surgeons, has long been the theme of reflection, and its absence a source of regret with most of the best professors of the science of Dental Surgery; for, it has well been reasoned, until there is some public test of ability submitted by its professors, and evidence of their competency to discharge faithfully the duties of the art, imposition and fraud will have no bound to their progress; and impudent empiricism, and modest worth, will have the same seat appointed to them by the mass who cannot, in the very nature of things, make the distinction. If most of our Medical Colleges had among the various professorships, the Chair of Dental Surgery, and, as lecturers on that branch of science, men of known abilities, long since would dental surgery have taken that high stand which its importance so justly entitles it to, instead of being classed, as it is by some, as one of the humblest branches of surgery.

That Dental Surgery held a distinguished station among the important sciences with the ancients, we have only to turn to their various modes of treating the teeth, known to every educated dentist, for proof; and hence, if no other argument were necessary to enforce the establishment of a National College of Dentists, methinks the desire to rescue a noble science,—a science not unworthy the profound attention and study of the gifted ones of antiquity—from obloquy, would of itself form a powerful reason.

Ignorant pretenders, itinerating charlatans, impudent empirics, would be brought to a stand, and those who would dare question the claims of the worthy and intellectual, be silenced.

I cannot agree with the talented Dr. Parmly, that the mere name of Dental Surgeon ever did exclude from the refined circles of elegant hospitality its owner, or that it ever operated upon the professor of the science so as to exclude him from the festive board, or the refinements of the drawing room. There are men who will disgrace any profession

—and from such alone should the partialities of friendship and fellowship be kept. But there is a pre-eminence to which intellect entitles its possessor—a dignity which attaches itself to mind, which will always secure to the individual of any profession respect and deference; and whether it exhibit itself in the immortal songs of an Ayrshire ploughboy, as in the case of Burns, or gaze with the philosophic eye of a Franklin—himself a printer—or penetrate the canopy of the stars with the instrument maker, Rittenhosue, will ever command and compel admiration,—and the weak and squeamish fool who would object to a man purely on account of his profession, should be held up as a fair mark for the polished arrows of the satirist.

That our profession has been wofully disgraced, I make no question; I know the fact; but so has almost every other, from the sacred desk down to the nameless art. Let the professors of our science use their endeavours to elevate it, and it must, and will succeed. Many of them can wield a ready pen; let them contribute their mite towards the great treasury of information. New subjects present themselves every day in the course of our profession—let them be made known, let the curious and the scientific examine them,—let the different modes of our practice be criticised and compared: in short, let us strive to give to the profession that dignity and that character which it has had in past centuries, and which its importance so justly entitles it to, and to this end unite in the permanent establishment of "the American College of Dental Surgeons."

AN OLD GERMAN REMEDY FOR TOOTH-ACHE.

Of the various kinds of nostrums, or quack medicines, that bold or cunning ingenuity has been able to invent, none have been more anxiously seized upon than those which have purported to cure the tooth-ache; and one has no sooner failed or fallen into disrepute, than another has been gotten up. Every year almost, from time immemorial, has produced its scores of remedies, and the loss of confidence in one, has only served to inspire it afresh in the virtues of another; and thus credulity with a liberal hand, has ever been ready to reward those who under the guise of benefactors, have sought only to impose upon the credence of the afflicted or unfortunate.

With most persons afflicted with tooth-ache, any thing is preferable to having the offending organ removed; that is the last remedy. In looking over an old No. of "*the Monthly Magazine*," for *September*, 1798, we came across the following and we do not for a moment doubt that the confidence of Dr. Hirsch in the anti-odontalgic virtues of the *Caccinella*, ridiculous as it may seem, was, as he has here represented it.——BALT. ED.

"In the practice of my profession," says Doctor Frederick Hirsch, Dentist to several German Courts, "I have particularly turned my attention to the cure of the tooth-ache, and I learned from a celebrated German Physician, as well as from the *Journal der Erfindungen*, &c. 'Journal of Conventions, Theories and Contradictions, in Natural Phylosophy and Physic, No. XIV.

p. 135, that among other insects, the well known lady-bird, *caccinella septempunctata*, possessed a peculiar virtue against the tooth-ache; I was induced to collect some of these insects; on repeated trials I found it to exceed my expectations, and I was so happy as to cure several persons speedily and completely with the small insects; finding myself obliged to repeat the remedy only in the cases of a few female patients. My method of proceeding was as follows: I crushed the insect between my thumb and forefinger, and rubbed it between them until their points grew warm; with the forefinger and thumb thus prepared, I then rubbed the affected parts of the gum, and the aching tooth; upon which the pains in every instance, except in the cases mentioned above, completely ceased; I found likewise, that the medicinal virtue of this insect was so powerful and durable, that my forefinger was capable of remedying the tooth-ache, for some days after, without crushing an insect on it afresh."

Cure of Tooth-Ache,—destruction of living nerve, and removal of the tenderness of the bony cavity of a decayed tooth, without pain in most cases, and with slight pain in any.—By S. Brown M. D.

Of all the remedies for the above diseases, which have hitherto been generally made known to the profession in this counrty, arsenic is unquestionably the most prompt, safe and effectual, when properly applied.

1. To a hollow tooth the bony parietes of which are too sensitive to be prepared for stopping, the dry arsenic may be applied in a small quantity on a lock of moist cotton of sufficient size to fill half the cavity when moderately compressed. Over this, wax, tinfoil, or dry cotton, should be placed in such a manner as to prevent the escape of the medicine into the mouth. A very minute portion of the arsenic is sufficient, provided it can be completely confined to the cavity of the tooth.

2. To a carious opening which is the immediate cause of tooth-ache, as well as to one in which a living nerve must be destroyed in order to prepare the tooth for stopping, the arsenic should be applied on the extremity of a lock of cotton, steeped in creosote instead of water. The effect of the creosote is to allay the pain which the arsenic alone would produce when acting on the living nerve. In the former case (No. 1.) no creosote is necessary, because no nerve is present. In all these cases it will be well to apply the remedy in the early part of the day, in order that the patient may be able to use proper caution in preventing the removal of the cotton, and also be careful to keep the mouth free from any portion of the medicine which may make its escape. Excoriations of the lips, tongue and gums, may be the unpleasant consequences of applying the remedy in the after part of the day, in case, during sleep, the cotton should be displaced. It need scarcely be remarked that a powerful and dangerous remedy like this, should be used with the utmost care.

ON THE DEVELOPMENT AND STRUCTURE OF THE TEETH.

(From the Boston Medical and Surgical Journal, for September, 1839.)

Investigations respecting the structure and development of the teeth have been carried on during the last few years, by some of the most celebrated anatomists now living; and it is with much satisfaction that we are enabled to place before our readers the highly interesting and valuable results at which they have arrived. In the present article we propose to examine, first, the structure, and secondly, the development, of the teeth.

I. The Structure of the Teeth.—In a paper published in the Philosophical Transactions for the year 1678, Leeuwenhoeck announced that, having extracted one of his own teeth, he examined it with lenses, and that he and others " plainly saw that the whole tooth was made up of very small, straight, transparent pipes; of these pipes Leeuwenhoeck gave two figures, and he spoke of their existence in the teeth of the cow and of the haddock. In the year 1687, the same author wrote a continuation of the above researches, in which he further explained the nature of these " pipes," as existing in man and various animals; and he described a molar tooth of the human subject, which was the object of very careful investigation, to contain 4,822,500 pipes or tubes. This discovery of Leeuwenhoeck remained unnoticed during many years.—Writers upon the structure of the teeth who succeeded him, and they have been numerous, contented themselves with describing the appearances observed upon examination by means of the naked eye. Purkinje and Retzius, unknown to each other, conducted researches upon the structure of the teeth, with the assistance of the microscope.

In the year 1835, the former, through his pupil Frankel, announced the discovery of the tubular structure of ivory. Nearly at the same time, Retzius, in a series of letters to the Royal Society of Stockholm, published the details of his researches. Muller, in his Archives for 1835, analyzed the above researches, and made important additions to them. Mr. Owen has conducted his extensive survey of the same subject into the field of comparative anatomy and geology. Mr. Tomes, another of our countrymen, has also written an original and very interesting paper upon this subject. It is at once a proof of the accuracy of the above observers, and of the perfection which the microscope has attained, that although the use of the highest compound lenses has been found requisite, in order to reveal the more minute structures, all the observers, whose names we have mentioned, agree in every point. We hope that the knowledge of this fact will prove a satisfactory answer to those who refuse to use the microscope, and to listen to the results derived from its use, " because it is liable to so many fallacies."

After the perusal of Brewster's paper " On the Structure of the Crystalline Lens," published in the Philosophical Transactions for the year

1833, which proved that the peculiar mother-of-pearl color of that structure depends upon its fibres; it occurred to Retzius, that the same peculiar color possessed by dental bones might also depend upon the entering into its composition of minute fibres. These minute fibres Retzius readily discovered; and he afterwards proceeded to conduct researches into the structure of the teeth generally.

1. *The Ivory or Bone of the Tooth.*—Retzius states that "having made a fine section of a tooth that had been placed in diluted muriatic acid, and having examined it by means of transmitted light, with a lens magnifying as low as 60 diameters, it will be quite apparent to the observer that it is composed of undulating fibres, in apposition internally with the *cavitas pulpæ*, and externally with the surface of the tooth."—If an oblique section be afterwards made, and a magnifying power of 200 diameters be employed, these fibres will appear to be hollow. Retzius found that the above fibres or tubes gave off branches, and that the main trunks opened into the cavitas pulpæ. Although these branches are principally evident towards the external surface of the tooth, the canals at their origin may be distinctly seen to present dichotomous divisions.

Retzius details the appearances revealed by the microscope in the teeth of man and the lower animals. In man, "the tubes which are contiguous appear to run parallel; upon examining a number, they are found to radiate from the central cavity towards the circumference." These tubes have, more or less, three curves, resembling the Greek letter ξ.—These curves vary in different teeth, approaching sometimes in form to the Roman letter S. In well-formed teeth, the curves on each side present a certain symmetry. Independent of these general curves of the entire tube, under a higher magnifying power are observed "numerous shorter curvatures, nearly 200 of which may be counted in the space of a line;" these produce the appearance in each tube of an undulating line. Professor Owen has remarked partial dilatations in the tubes of the human teeth, an appearance which has not unfrequently been noticed by ourselves.

Leeuwenhoeck endeavoured to ascertain how it was possible that tubes, which appear to run parallel to each other, should fill such a different space on the surface of the tooth, and at the internal cavity. He sought in vain for a trace of branches from them. Purkinje discovered, however, that these tubes do give off branches. Retzius says of them, "from their commencement in the cavitas pulpæ, the tubes appear to be of the same diameter for five sixths of their course;" and this diameter, after repeated admeasurements, he states to be $\frac{1}{383}$ of a line. After running five sixths of their course, they are found to diminish considerably in size until they disappear or terminate in small, irregular, rounded, and scattered cells. The branches of these tubes are more easily observable in milk teeth. In the permanent teeth, the branches are formed principally towards the extremities of the tubes; in the milk teeth they arise nearly equally from all parts. The branches arising from different tubes do not communicate with each other, except perhaps at their extremities.

Are these fibres tubular?—Retzius states that the cavitas pulpæ, viewed under a sufficiently high magnifying power, presents numerous orifices which he considers to be the mouths of the main tubes. He also states that, by making sections of the tubes at right angles with their course, the calibre of these tubes may be determined with facility; and that, upon placing a section made in the above manner upon a dark ground, white spots distinctly denote the tubular orifices. Purkinje and Frankel convinced themselves of the tubular nature of these fibres, from finding, on making various sections of the tooth, that they were always able to demonstrate the parietes and cavity of the cut tube. Muller states that he has seen these fibres or tubes in the horse, injected with red coloring matter. Mr. Tomes has made some conclusive experiments upon this subject. After having reduced a transverse section of a giraffe's tooth, so as to render the tubes visible by the aid of transmitted light, he added to it, while under the microscope, diluted muriatic acid. "Chemical action immediately commenced, gas was disengaged and proceeded from the cut extremities of the tubes." He states that, more than once, he saw "the bubbles of gas in the tubes, and traced them to their extremities from which they escaped."

The Parietes of the Tubes.—Muller has made some researches upon this subject, which are of much interest. He states that the diameter of the tubes is only one fifth or one sixth of the spaces between them; the structure in the intervening spaces necessarily forming the greater part of the bulk of the tooth. He says that, upon breaking fine sections of teeth perpendicular to their fibres, he has frequently seen the latter "extend from the margin beyond the tooth-substance, seeming to be perfectly straight and inflexible;" but the earth being removed from slices of teeth, by means of acids, and the latter being torn in a direction contrary to the course of the fibres, "these fibres appear, upon the torn margin, quite flexible and transparent, and they not unfrequently project considerably beyond the margin of the section." Muller thinks that it may be inferred, from the above experiment, that the tubes have an animal basis or membrane, which in the firm tooth is fragile, and probably penetrated by calcareous salts. Upon this subject Retzius says that, under a certain light, "the mouths of the canals appear bounded by a definite shadow;" and their walls, when the light falls upon them, have a different appearance from the surrounding matter, which Frankel calls the fundamental substance of the tooth. Frequently the circular orifices have a darker and somewhat yellowish appearance. "We may conclude," says Retzius, "from all this, that the above-described tubes are not merely hollowed out of the fundamental dental substance, but that they are tubes properly so called, consisting of a particular substance, differing from that of the tooth."

The Contents of the Tubes.—Muller was the first who made investigations upon this branch of the subject. He considers the tubes to be filled with organic deposits of calcareous salts, which are soluble in acids. According to him the white color of the tooth is dependent upon these contents, the intervening substance being more or less transparent. He says, "The white color of the tooth disappears upon the application of acids; and teeth thus treated do not regain their colour when dried." Observers agree that even if the enamel only be carious, or rather the ivory immediately internal to the enamel, then the tubes passing towards the cavitas pulpæ lose their white color. Muller states that he has seen in carious teeth, independently of the transparent appearance above alluded to, a brittle substance contained in different parts of the tubes; he has, however, also observed the latter in perfectly healthy teeth, and he also speaks of the existence of opaque spots in the course of the tubes. According to Retzius, the contents of the canals consist of an inorganic or earthy substance, which appears white when seen on a dark ground. It appears to consist of "small masses, formed of infinitely delicate particles." The greater or less number and the degree of visibility of these particles appear to depend upon the extent to which the preparation has been penetrated by water, oil, or turpentine. Mr. Tomes agrees with Retzius as to the contents of these tubes. In mammalia he states them to consist of an amorphous mass, the composition of which is the phosphate and carbonate of lime. He concludes that the latter enters into the formation of the above mass, from the results of the experiments which we have before noticed, where he placed a thin section of the tooth of the giraffe in muriatic acid, and observed under the microscope the evolution of gas from the interior of the tubes. Mr. T. states that these tubes in the cartilaginous and osseous fish contain much less of the earthy matter than do those of animals higher in the scale.

The Use of the Tubes.—Retzius believes that the tubes of the teeth, as well as the canals of bone (canals of Havers), are for the circulation of nutritious fluids, which he imagines to be secreted by the capillaries which clothe the surface of the pulp. We quote from Retzius the following interesting observations upon this subject.

"We have many examples," he says, "that Nature organizes structures which have a close affinity to each other, according to one and the same plan, and hence we have, in different parts, organized formations, which in some are of the greatest importance, whilst in others they are of much less functional significance, or of none whatever. When we assume, what is highly probable, that in bone the peculiar vessels in question give passage to fluids during the entire life of the animal, which fluids contain the solid as well as the liquid materials of the osseous substance, it does not necessarily follow that the same process must be carried on in the teeth during the whole of life; on the contrary, I am inclined to believe that the vessels of dental bone exercise their most perfect action during the first period only of the formation of the tooth. At the same time, the existence of the continual vital process in the tooth, as well as in the crystalline lens, cannot be doubted, which appears, however, to be carried on without any constant exchange of solid matter, and must hence consist in a renovating circulation of fluids."

Mr. Tomes "conceives that the tubes, containing as they do an amorphous substance, could, by capillary absorption, carry on a kind of slow circulation of the more fluid parts of the blood." Professor Owen accounts for the good effects produced by stopping decayed teeth, by "the calcareous salts in such cases pouring out from the extremities of the tubes divided in the operation; then a thin dense layer intervenes between the exposed surface of the ivory and the stopping."

Of the Intertubular Substance.—Independently of the salts of lime contained in the cavity of the tubes, and of those which, with the animal basis, form the walls of these tubes, Muller considers that salts of lime also enter into the composition of the intervening substance; and, as we have seen above, that the tubes themselves are only of a size equal to one fifth or one sixth of the space between them, the greater portion of calcareous salts which enter into the composition of the tooth must be contained in the intertubular spaces—Muller considers the lime to be either chemically combined with the cartilage of the tooth, or to be deposited in it in an insoluble manner. The lime-earth of the intertubular spaces may be demonstrated by carefully boiling slices of teeth in potash during many hours. The cartilage is dissolved, and the intervening substance becomes opaque and white. According to Muller, the lime thus obtained appears in the form of dense grains. Between the tubes are observed also the *corpuscles or osseous cells of the teeth*, called by Professor Owen the *calcigerous cells*. Some of the smaller tubes terminate in these cells. Valentin believes them to be analogous to the corpuscles of bone.—Retzius states "that they, as well as the tubes, contain earthy salts." This he proves by causing their white color to disappear, by placing the preparation in diluted muriatic acid.

The Terminations of the Tubes, according to most observers, take place—first, by entering the corpuscle or cell; secondly, by forming plexuses with one another; thirdly, by being lost in the intertubular substance, either in the interior of the ivory or at its surface of attachment to the enamel and crusta petrosa; fourthly, by communicating with the cells of the crusta petrosa.

2. *The Enamel of the Tooth.*—This is also called the vitreous and adamantine substance. Berzelius states that enamel *does not contain any animal matter.* He considers that the delicate tissue which

remains after its earthy matter has been dissolved in acid, is the residue of a membrane which formed the internal lining to it. He says that "enamel is not at all blackened on the outside, and but very slightly on the inside, by being burned; and that it does not lose more than two per cent. of its weight from combustion." Retzius, with Berzelius, agrees in the existence of a membrane which lines the enamel internally, and which is a band of connection between it and the external surface of the ivory. Retzius believes that the inorganic fibres of enamel are surrounded by a capsule of organic matter; a view which we shall see is adopted by Purkinje and Raschkow. The researches of Mr. Nasmyth* show the existence of a layer of substance external to the enamel, and intimately connected with it. This layer Mr. N. has demonstrated in the tooth of the human subject, in the calf, and in many other animals; and he considers its presence to be almost universal. It is shown by the immersion of the tooth in diluted muriatic acid during a very short space of time, when it can be removed in the form of a membrane. It is continuous with the layer called the *crusta petrosa* on the surface of the fang, to which it seems to bear the greatest analogy, and, like the latter, contains the characteristic cells or corpuscles. The existence of this layer on the surface of the enamel, as pointed out by Mr. Nasmyth, we have since demonstrated, by exposing teeth to a rather high temperature, when a *very thin layer of black substance is recognized on their external surface:* it is more easily perceived, and it is thicker in young than in old teeth. Retzius agrees with Purkinje and Raschkow, in believing that the enamel, previous to the eruption of the tooth, consists of delicate prisms; each prism, upon its solution in muriatic acid, leaves behind a small portion or organic matter. As the latter is not found at a later period, Retzius supposes that it is supplanted by the deposition of earthy matter, so as to remain in a quantity so small as to be incapable of demonstration. The enamel fibres are described by Retzius to be ${}_{8}{}^{1}{}_{1}$ of a line in diameter, the surface of which is marked with transverse striæ, which Retzius believes to be produced by the above-mentioned organic sheath.—The fibres of the enamel internally rest upon a delicate membrane interposed between the latter and the ivory. Externally, these fibres present a hexagonial form, which is seen by the aid of a lens, magnifying 300 diameters. Where the tooth has not been worn away, the extremities of these fibres are rounded. The enamel fibres are supported upon the ivory in different directions. Towards the apex of the tooth the direction is vertical, and the lowest fibres are transverse. In the lateral part of the tooth there are fibres which are interposed between other fibres, and which themselves do not reach the surface of the ivory. Where the enamel joins the dental bone, it contains at different parts a number of delicate crevices, which appear to have their origins in the separation of tho fibres, and produce a dentated appearance, similar to that of the crystalline lens. Retzius states that this appearance is rendered more evident by the immersion of the enamel in a solution of caustic potash, a circumstance which strengthens his belief in the existence of an organic sheath to the enamel fibres. Independently of the transverse striæ on the surface of each enamel fibre, the enamel presents a lamellated appearance, analogous to that of a calculus; this is also evident in ivory generally, but more particularly in that of the elephant's tusk. The fibres of the enamel, like those of the ivory, are more or less tortuous in their course.

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* In a paper read at the Medico-Chirurgical Society.

3. *The Crusta Petrosa.*—It is universally known that ivory and enamel form the principal part of all simple teeth; and previously to the recent investigations in odontology, it was supposed that no other substance was present in the latter. Retzius and Purkinje, have, however, proved that a third substance enters into the formation of almost *all teeth.* This substance is the *crusta petrosa* or *cortical substance.* Frederick Cuvier spoke of this structure as existing in the cachalot. It is found on the external surface of the fangs of the teeth of the mammalia. It consists of cartilage and of osseous earth. According to Retzius, " this cartilage may be removed from the fang of the tooth in the form of a membrane, its earthy salts having been previously dissolved in acid; its consistence is less than that of the cartilage of ivory. In the human tooth, it is an extremely thin stratum, which takes its origin at the neck of the tooth where the enamel terminates; it gradually increases in thickness towards the extremity of the root, where it is generally the thickest. It is thinner in young than in old persons. In proportion as the cavitas pulpæ diminishes, this substance is developed until it sometimes becomes thicker than the dental bone itself." The exostoses, so frequently met with on the fangs of the teeth, are of a composition similar to this structure. It is imperfectly formed in the deciduous teeth. Examined by means of the microscope, it presents tubes and osseous cells, bearing the greatest analogy to those of bone and ivory. Professors Retzius and Owen have seen direct communications between the fine branches of the ivory and the tubes and cells of this substance. Mr. Nasmyth states that it always exists on the surface of the enamel; and Purkinje and Frankel " once traced it a short way upon the surface of the enamel of the tooth of an old man." The two latter observers state that the crusta petrosa has a lamellated structure; they have found it lining the cavitas pulpæ, and have given it the name of *substantia ostoidea.* Retzius thinks that after the obliteration of the cavitas pulpæ, the crusta petrosa is the medium through which nutrient fluids are conveyed to the tooth.

The Cementum.—The structure of which we have just spoken is generally considered to exist upon the root or fang of the tooth only, and to terminate at the point where the enamel is secreted, viz., at the neck of the tooth. As has been stated above, Purkinje and Frankel, however, once saw this substance covering a small part of the enamel of the tooth of an old man, and Mr. Nasmyth describes it as existing upon the surface of the enamel in most quadrupeds; and he has exhibited specimens and drawings of this disposition in the simple and compound teeth of the human subject, and in the simple tooth of the calf, &c. The cement is a deposition on the surface of the enamel, found in the compound teeth of the herbivorous animals; it has been described by Hunter, Blake, and many other anatomists.—Cuvier, in his "Ossemens Fossiles," has given a very minute and interesting account of its development and structure in the grinder of the elephant. It is formed by the capsule, as appears to be the crusta petrosa; it possesses corpuscles and tubes, as does the crusta petrosa; in short, it appears to us that the cementum is simply the crusta petrosa existing on the surface of the enamel; not only, as has been hitherto supposed, in the compound teeth of herbivorous animals, but according to the views of Mr. Nasmyth, in the simple and compound teeth of mammiferous animals. Muller most strangely describes the structure under consideration "as a deposit from the salts of the saliva, and to be essentially the same as what is called tartar in the human subject."

II. The Development of the Teeth.—The researches in this branch of odontology which have lately been published, and to the examination of which we shall at present confine ourselves, have an interest not much inferior to those of which we have already spoken. Much, however, in this department remains to be done; and observers have as yet to test the accuracy of the novel views which we are about to relate.

We shall speak—1st, of the Development of the Ivory of the Tooth; 2dly, of the Enamel; 3dly, of the Crusta Petrosa.

The Development of the Ivory of the Tooth.—The ivory of bone is formed by an organ called the pulp of the tooth. This pulp is at an early stage of development, contained in a cavity called the follicle, from the base of which it grows, and to which it is attached by vessels and nerves. According to Arnold and Goodsir, this follicle is thus produced: at a very early period of development (between the fifth and seventh weeks) in the human subject, a groove is observed on the free margin of the aveolar arch; from the floor of this groove the pulps of the teeth grow; after a certain period, septa are formed, which separate the pulps from each other, and divide the groove into a series of follicles, which continue to have a communication with the mucous membrane of the mouth, until a much later period. Arnold has seen the orifices of these follicles quite distinct in a child at birth. The researches of Mr. Goodsir have been conducted on a very extensive scale, and he has published delineations of the development of the follicle in all its stages; at the time that he conducted his dissections, he was not aware of the views of Arnold, which appeared in the Salzburg Med. Zeitung for 1831. Purkinje and Rashkow are quite opposed to the above view of the development of the follicle, as described by Arnold and Goodsir. They state that they "have looked with the greatest care, and have made researches in comparative anatomy, but have never discovered a trace either of the groove or of the orifice of the follicle." Rashkow states that "the membrane of the follicle consists of soft fibres mixed with much granular matter; at the earlier periods of development, this follicle is not united with the gum; its internal surface is smooth like a serous membrane."

The Pulp or Dental Germ.—The pulp is developed in the interior of the above-mentioned follicle, which when the latter assumes the name of *capsule*, Raschkow considers "the pulp to be a production of the interior of the capsule, inasmuch as the two are inseparably connected, their vessels and nerves having a common origin." He denies that the dental germ is a continuation of the dental nerve.—The following is a condensed account of the views of Raschkow on the pulp and its functions. This organ, at its earliest period, consists of globular granulations, in which are not observed either vessels or nerves; afterwards the vessels appear and then the nerves. The granules of nervous matter, in the interior of the pulp, assume the form of nervous cords, after the vessels are completely formed. In no part of the body are the extremities of the nerves so well seen as in the pulp, when it is mature. The nerve upon entering the pulp divides into filaments, the latter into a pencil of rays, in which they terminate. These filaments are accompanied by a cellular web. In the interior of the pulp of the hare, sow and stag, stony concretions may be observed towards the apex. A membrane covers the dental pulp from its base to its apex; in this membrane the formation of the dental substance always commences. This membrane Raschkow calls "membrana præformativa," and it is described by him as being very dense. Raschkow has observed upon the surface of this membrane, previously to the formation of the dental substance, certain elevated spots. These he considers to be most probably transformed into the undulating ridges on the surface of the dental substance, to which the enamel is attached. According to Raschkow and Purkinje, the dental substance is formed immediately under the preformative membrane, the latter assuming an almost stony hardness; between the dental germ and this ossified membrane, a layer of dental fibres is deposited from without inwards, the parenchyma of the dental germ supplying the materials. It will be seen that the views of the above observers differ much from those of preceding writers. Hitherto it has been supposed that the membrane covering the surface of the pulp, and intimately adhering to it, is the secreting organ of the ivory. Observers have accounted for the peculiar waving course of the tubes in ivory, by supposing that the pulp undergoes certain periodic movements.

Development of the Enamel.—We have seen that the first stage in the development of the tooth consists in the formation of a follicle or capsule, from the base of which grows an organ—the pulp, the function of which is to secrete the ivory of the tooth. Contemporaneously with the appearance of the pulp is the formation of another structure, a growth from the internal layer of the capsule; it is the formative organ of the enamel. It appears directly opposite to the ivory pulp, was called by Hunter the "enamel pulp," and by Purkinje and Raschkow the "adamantine organ.' The researches of the two last-mentioned authors are highly interesting. They state that the "adamantine organ appears as a globular nucleus, having a granular structure, projecting into the cavity of the capsule towards the pulp of the ivory;" and that it eventually is converted into the membrane which secretes the enamel in the following manner: "It throws off towards its internal surface a stratum of fibres, producing the appearance of a silky covering. These fibres are eventually converted into a membrane—the membrane of the enamel. It has no traces of vessels or nerves. If examined with the microscope it will be found to consist of hexagonal bodies of almost equal size.—Each of these fibres must be considered a *gland*, whose function is to secrete a single enamel fibre, corresponding with itself. Each *gland* simultaneously with the earliest formation of the dental substance, deposits the primitive part of each adamantine or enamel fibre, one upon another, so that every one of these fibres, when carefully examined by the microscope, displays the order of its parts arranged in strata in a transverse direction." The enamel is first deposited upon the hardened preformative membrane mentioned above, and the progress of its formation corresponds exactly to that of the development of the ivory. At an early age of the production of these enamel fibres, the organic substance is a lymph which enters between each individual fibre, and appears to soften its entire substance; this organic substance appears to be formed by the parenchyma of the adamantine membrane between the above-named *glands*." Purkinje and Raschkow suppose that this animal substance, by means of a chemico-organic process, enters into close connection with the earthy matter, and thus forms the animal basis of the enamel, which is evident, by means of the microscope, after the latter has been placed in acid. These observers account for the production of the peculiar waving fibres of the enamel by the occurrence of certain movements in the adamantine membrane. The adamantine membrane is permanent in the incisors of the rodentia. Previous to the formation of the adamantine organ, it is supposed that the rudiments of this structure exist in the form of a serous sac.

Development of the Crusta Petrosa and Cementum.—Upon this branch of the subject much remains to be done. No new facts have been adduced since the time of Cuvier. The crusta petrosa and cementum are formed subsequently to the completion of the ivory and enamel; but whether the organ which produces them is a modification of those which formed the latter, or one for their especial development, anatomists have not yet determined.

The result of the investigations above detailed, is that the structure of the tooth is very analogous to that of bone. We shall refrain from making any observations upon this analogy until we have laid before our readers a view of the recent discoveries upon the structure of the latter tissue. Although we possess so full an account of the internal composition of the teeth, we are very deficient in researches into the development of each individual part of the tooth, as well as of the organ generally; we have noticed above that Purkinje and Raschkow entertain opinions directly opposite to those of Arnold and Goodsir; in fact, we believe, that upon no subject is there a greater diversity of opinion than upon the nature and functions of the structures in connection with the development, growth and organization of the dental apparatus. In support of this assertion, we refer to the first part of the work by Mr. Nasmyth. The cause of the strange discrepancies of opinion therein detailed, appears to arise from the too partial examination of the subject before us, which has been conducted by various observers.

Mr. Nasmyth promises to prosecute an extended series of researches into every branch of odontology; in doing so we feel sure that he will reconcile many of the present conflicting opinions, and we hope to receive from his hands, what is much wanted in medical literature, a Systematic Treatise on the Development, Structure, and Diseases of the Teeth.

To conclude: to those who wish to pursue the subject which we have so briefly brought under notice, we recommend the first part of the work of Mr. Nasmyth, as containing an entire translation of the papers of Retzius, which are illustrated by many beautiful and origiginal plates; also a complete view of the researches of those whose names we have introduced in the present article; and, lastly, a comprehensive historical survey of all works on odontology.—*Brit. and Foreign Med. Review.*

MISCELLANEOUS NOTICES.

The following notices were intended for the August and September Nos. of the Journal, but were unavoidably excluded for the want of room.

Prospectus of the Facultyof Physic in the University of Maryland.

We find that the vacancy in the Surgical Chair of this old and highly respectable School, is filled by the appointment of Dr. N. R. Smith, formerly professor in the institution. Dr. Smith needs no commendation from us. His value is too well known to the public to be enhanced by our attestation. As a Surgeon, and as a teacher of Surgery, Professor Smith has few equals. The other Chairs are filled as they were last year.

The Professors are about to undertake great additional labour by lecturing during a term of six, instead of four months. We hope that this innovation may turn out to be reform. The Lectures commenced on the first of September.

Annual Circular of the Washington University, of Baltimore—Medical Department.

This institution has been quietly growing in importance. The Professors have perseveringly laboured to deserve success rather than to secure it. They have spent more time in instructing their pupils than in puffing themselves, and consequently have advanced the interests of their School steadily though slowly.

The buildings of the Washington University, are, in our opinion, better adapted to their purposes than any similar buildings in the United States. Connected with commodious lecture rooms, &c., are a most excellent hospital and rooms for the accommodation of a number of resident students. These board in the house, and have great advantages.—Were we a student again, we should board in the Washington College, and learn practical knowledge at the bed-side of a hundred patients, rather than lodge in a crowded boarding house in a city, where seclusion for study is impossible, and learn practical knowledge no where. We like this plan of teaching students their business. We are convinced that many a graduate in medicine, who has never seen a sick person, goes to the practice of his profession with a sickening sense that he is utterly unqualified to distinguish and prescribe for disease. A man can as easily learn seamanship from books as he can the practice of physic.

Hamden Sidney College—Richmond, Va.

From our Knowledge of the Professors in this School, students may expect courses of Lectures equal to any that will be delivered elsewhere.

The Session will commence on Monday, 2d November. We are well satisfied to see that Virginia is now awake to the importance of educating her own physicians. We care not how many Medical Schools are established, provided they limit their competition to a struggle for excellence, and not for popularity.

Advancement of Medical Science—Warsaw University of Illinois.

We learn with pleasure that this important institution is, by its Charter, authorized to, and has established a Medical Department. From our knowledge of the President, Doct. J. B. Perry, and the gentlemen associated with him, we have no doubt that this infant institution will flourish and do good. Its establishment reflects the highest credit upon the State, and shows that she is alive to the all-important subject of education; and that in the cultivation of Literature and the Sciences, she is determined not to be behind other sections of the country.

We have read with much pleasure, the inaugural address of the President. It is an able production. The importance of education is set forth in it, in a clear and masterly manner.

RECENT PUBLICATIONS.

The following works we had intended to notice in the present Number of the Journal, but the multiplicity of our engagements prevents us from doing it. They shall, however, receive early attention.

Researches on the Development, Structure, and Diseases of the Teeth, By ALEXANDER NASMYTH, F. L. S. F. G. S., &c. &c.—*London*, 1839.

A Practical Treatise on the Human Teeth, showing the cause of their destruction, and the means of their Preservation. By WILLIAM ROBERTSON, with Plates—*London*, 1839.

Popular Treatise on the Structure and Diseases of the Human Teeth, with an Illustration of the present state of Dental Mechanism. By J. L. MURPHY—*London*, 1837.

Preservation of the Teeth, a Family Guide, being familiar observations on their Structure and Diseases, &c. &c. By DAVID R. HITCHCOCK, Surgeon Dentist.—*Boston*, 1840.

A Treatise on the Anatomy and Physiology of the Teeth, &c. &c.—their Diseases and Treatment, with Practical Observations on Artificial Teeth, and Rules for their construction. By DAVID WEMYSS, M. R. C. S. E., &c. &c.—*London*, 1835.

ON THE USE OF ASBESTOS, IN STOPPING A CERTAIN CLASS OF CARIOUS TEETH.

[BY SOLYMAN BROWN, M. D.]

It is asserted by several of our professional brethren of considerable eminence, that in those cases where the cavity of a tooth extends so nearly to the nerve as to render it sensitive to the touch of an instrument, and therefore liable to be affected by the transmission of caloric through the metal composing the stopping, the use of filamentous asbestos, which very much resembles floss silk, or very fine cotton, placed at the bottom of the cavity directly over the nerve, is a valuable discovery in surgical dentistry.

The philosophy of the operation is this :—Asbestos is one of the best non-conductors of caloric known, especially among those substances which could be of use in the case in question. The conditions demanded are, 1st—That the substance employed for the purpose proposed, should be as indestructible in the tooth as the gold that covers it. 2d—That it should not be liable to absorption through the medium of the vessels of the bony structure of a tooth. 3d—That it should be as nearly as possible an absolute non-conductor of caloric.

These several indispensible pre-requisites are believed to exist in an eminent degree in fibrous and fine asbestos, a substance of which there are various qualities in different locations, and sometimes indeed in the same locality. The kind required to prevent the transmission of the two sensations of heat and cold through the metallic plug used in stopping a tooth, to the delicate nerve beneath, should be very fine in its filaments, delicately pure and white, and scarcely distinguishable from the purest untwisted or native silk. In what sections of our country it can be found in its purest state, I am not aware ; but I have been in the habit of obtaining it of an excellent quality of Mr. Chilton, of this city, well known as a distinguished chemist and apothecary.

The mode of its application is as follows :—When the cavity has been well cleaned and dried as usual, place at its bottom, or on the part adjacent to the nerve of a tooth, a sufficient quantity of the mineral made very soft and pliable, to fill about one-sixth part of the cavity when well compacted beneath the gold. Over this introduce the metallic stopping in the usual manner.

It is not claimed that a sufficient number of experiments have been already made with this substance as above described, to authorize the unqualified assertion that asbestos is destined soon to become an article of general demand among dental operators ; but enough has already been done by way of experiment, to create a strong probability that this will be the result.

The writer respectfully requests those members of the profession who may be inclined, from the momentary impulse of personal pride or vanity, to believe that what they have long been in the habit of doing is the best thing that can possibly be done in dental practice, not to reject these hints without a trial. It was thus that many of the most valuable truths of modern science, were smothered for ages beneath the dark pall of jealous superstition in centuries that have passed. It is now time that physical truths should stand or fall by the test of experiment. Theory and conjecture have sufficiently long, held their withering dominion over the fields of science. Improvements in our art, are as inevitably certain as the increase of splendour at the rising of the Sun; for the progress of all the arts and sciences, is now upward and onward. Let him, therefore, who is willing to be left behind the age to linger as one of the rear guards in the march of intellect, neglect the signs of the times, and refuse to press forward in the race of improvement. But let those who love truth for its own intrinsic beauty, and who press onward to still higher professional attainments for the sake of more extended usefulness, suffer no opportunity to pass unimproved, of augmenting the number of valuable known facts on which our science rests.

AMERICAN SOCIETY OF DENTAL SURGEONS.

The formation of this Society seems to have infused new spirit into the profession. Since its formation, we have received communications from many of its most intelligent and respectable members, residing in various and remote parts of the country, expressing their high gratification at the establishment of an institution so eminently calculated to advance the science of Dental Surgery, and a determination to become members of it. We are glad that it meets with such general approbation; it augurs well for its perpetuity and future usefulness.

The favour which the Society has met with among the members of our own immediate profession, is little greater than what it has received from the medical.

We copy the following from "*The Boston Medical and Surgical Journal*," for October 21st, 1840, and one of the most ably conducted and popular medical periodicals of the day.

"AMERICAN SOCIETY OF DENTAL SURGEONS.—At a meeting of Dentists, assembled in the city of New-York, on the 18th of August, a constitution was adopted, and all dentists of reputation will hereafter probably belong to the Society—the object being to elevate the profession, and to establish uniformity in practice upon scientific principles. Horace H. Hayden, M. D., of Baltimore, was elected President; Dr. J. F. Flagg, of Boston, E. Parmly, of New-York, and E. B. Gardette, Vice Presidents. Dr. Parmly was appointed an agent to petitionthe Legislature of the State of New-York, asking for a charter, with power to confer the degree of *Doctor of Dental Surgery*. The next meeting will take place on the 2nd Tuesday of August, 1841, at the U. S. Hotel, Philadelphia. The above intelligence was gleaned from the last number of the American Journal of Dental Science, a periodical which we are always glad to receive. It is creditable to the Dentists of the United States, that they have succeeded in organizing themselves into a regular College—the good effects of which we trust will soon be manifest. If the literati, the philosophers and the cultivators of general science, in this country, had half the indomitable perseverance of the gentlemen who composed this convention, the many attempts made within the last two years to establish a National Association, would not have turned out to be mortifying abortions."

The editor of the same publication, for October 28th, after adverting to the appointment of members of the Society to prepare dissertations, together with the subjects thereof, that were respectively assigned to them, thus remarks:

"Physicians will be as glad to possess these discourses as the most enthusiastic dentist; and we cannot feel otherwise than solicitous to have them extensively circulated as a distinct work, instead of being confined to the pages of the Dental Journal. Let every person who has defective teeth, have an opportunity of reading the opinions of the best operators in the land."

We are gratified to learn that the efforts of the Society to advance the science, are thus favourably regarded, and are happy in being able to inform such as may feel an interest in its doings, that it is the intention of it to publish its transactions, together with the essays and dissertations that may be read before it, in a volume by themselves.

Traitè des Dents, Manière de diriger la deuxième dentition des enfans. &c. Par C. A. Jamet, Brêvete, Professeur de Prothèsis dentaire, Medicine, Chirurgien-Dentiste de la Facultè de Medicine de Paris, &c. &c. &c — Paris, Cher L' Auteur, rue Notre-Dame de Nazareth, No. 20, pp. 143, 1839.

The design of the author of the work bearing the above title, seems rather to have been the instruction of parents, and those having the care of children, in the means necessary to the preservation of their teeth, than the practitioner in the treatment of their diseases. To those, therefore, for whom it is intended, it contains, among many erroneous and false notions, as it regards the causes and nature of the maladies of the mouth, much excellent and valuable advice. Some of his remarks on dental hygeia are good; but his views in regard to the effects produced upon the teeth by the atmosphere and the different winds, which, though held in common with many able and distinguished writers, are altogether visionary and absurd. His observations on caries are ingenious. He says the disease is "produced by ulceration and suppuration of their tissue," (meaning that of the teeth) acknowledging, however, at the same time his ignorance of its causes. He divides the disease into seven species: 1st. Carie Calcarie. 2d. Carie Ecorcante. 3d. Carie Perforante. 4th. Carie Charbonne. 5th. Carie Diruptive. 6th. Carie Stationnaire; and, 7th. Carie Simultant.

Many of the directions which he has given in relation to the management of first and second dentition, are very good; and if every family had a work similar to this, and would be governed by the rules laid down in it, in their attention to the teeth and general constitutional health of their children, a vast amount of pain and suffering would be prevented. But as another French writer has justly remarked, most persons are of opinion that the teeth require no attention, until after the age of the fourteenth or fifteenth year, when, in many instances, disease has extended its desolating ravages so far as to bid defiance to the skill of the dentist.

Balt Ed.

OUR SUBSCRIPTION.

The following is a synopsis of our present subscription list, showing the States to which our patrons belong. It will be seen by inspecting the table, that the State of New-York furnishes nearly one half of our patronage; and that from five of the States we have as yet had no subscribers.

As Mr. Koecker, of London, has consented that we should reprint, in our second volume, his celebrated work on Dental Surgery, the Publishing Committee anticipate a large augmentation of subscriptions even from those States which have come so promptly to our aid in this first volume of our work. And when it becomes generally known that we have the promise of assistance from the pens of some of our most talented brethren in England, as well as from others who have never yet contributed to our pages in this country, there will scarcely remain a doubt of the promptness of the profession, generally, in sending in their names at an early day as subscribers to the second volume, accompanied by the subscription price of Five Dollars, safely deposited in a post-paid letter, addressed to one of the Editors, either of the members of the Publishing Committee, or to the Treasurer, Mr. Jahial Parmly, No. 3 Bond Street, New-York.

As many of our present subscribers have not remitted the amount of their subscriptions, even at this eleventh hour, the Publishing Committee find themselves compelled to adhere strictly to their rule, and not forward any numbers of the second volume to any subscriber whose amount of subscription is not paid punctually in advance. It is vastly more convenient for each individual who wishes to take the Journal, to enclose five dollars in a letter, and drop it into the post-office, than for the Publishing Committee to pay the printer, and give a general credit to their subscribers.

SUBSCRIPTION FROM THE SEVERAL STATES.

	No. of Subscribers.	*No. of Copies.*
Maine,	0	0
New Hampshire,	3	3
Vermont,	0	0
Massachusetts,	15	16
Rhode Island,	3	3
Connecticut,	15	15
New-York,	91	312
New Jersey,	6	6
Pennsylvania,	34	72
Delaware,	0	0
Maryland,	30	109
Virginia,	30	57
North Carolina,	13	16
South Carolina,	9	9
Georgia.	11	12
Alabama,	3	3
Mississippi,	0	0
Louisiana,	8	30
Arkansas,	2	5
Tennessee,	5	5
Kentucky.	16	17
Missouri,	2	3
Indiana,	2	2
Illinois,	2	2
Michigan,	0	0
Ohio,	11	11
District of Columbia,	6	25
New Brunswick,	1	1
England,	22	24
Scotland,	4	5
France	2	2
Holland,	1	1
West Indies,	1	1
Total,	348	Total, 767

CORRECTION.

The proof-sheets of Doctor Hayden's article, and his remarks before the Convention of Dental Surgeons, as published in the August and September Numbers of the Journal, were sent to him for correction, but were not returned until after the sheets had been worked off; we however, with pleasure give place to the corrections which he made in the present number.

Page 139, 2nd paragraph, 6th line from top, for, and that he terms the crusta petrosa; read, and that *which* he terms, &c.

Page 140, 6th paragraph, 3d line, read *deposition* instead of disposition.

Page 147, 2nd paragraph, 7th line, for saw, read *jaw.*

Page 148, 2nd paragraph, 2nd line, for *semi osseous strata*, read *stratum.* It is in the singular number, and so ought to be in every line where it occurs, which is no less than five times.

Page 152, 3d paragraph, 5th line, for canullæ, read *cancellæ.*

Page 157, 5th line from top, for disposition, read *deposition.*

Page 158, in place of what is said in two last paragraphs, and to the word, on 159th page, 3d line, procured, read the following:

The formation of a National Society of Dentists, he remarked, had been long a favourite project with himself; and he was happy to say, that he had never found himself wholly alone in this desire. As long since as the year 1817, he had consulted with the late Doctor Edward Hudson, of Philadelphia, who was favourably inclined to such an association.—Other gentlemen of the profession, however, were not inclined to make an effort in the business, although gentlemen of the Medical Faculty, (to their honor be it spoken) uniformly approved of the plan.

The prospect of succeeding, however, appearing rather unfavourable, he had mostly relinquished the plan until finding that his son manifested a desire to pursue the same profession, and contemplating a tour to the North in 1829, he resolved to make another effort amongst his professional friends and acquaintances, and in this instance, he met with much more encouragement, but not however, sufficient to justify a belief that the plan would succeed until the year 1838, when, in a tour to the north, he made the last attempt.

The speaker adverted in the next place, to the condition of the dental Art, at the time when he entered upon its duties, forty-three years ago. Then, said he, the name of a dentist was a reproach and a by-word. But viewing it as a subject susceptible of great and beneficial improvements, by well written essays or works, and not knowing at the time whether any such had ever been published, he applied to the elder Mr. Greenwood, of New-York, (then dentist to General Washington) who informed him, that he knew but one work that had ever been published, and that was John Hunter's on the Natural History of the Teeth, which he procured.

VALUABLE REPRINT.

A translation of the excellent Treatise on First Dentition, of M. Baumes of Paris, by Professor Bond of the Baltimore College of Dental Surgery, we are happy to announce as the next work selected for republication in this Journal, to be commenced in the next number of the present volume.

The learned author was a member of many distinguished literary and scientific institutions, as will be evident from the Title page of his work which we give entire in its native language.

Traité de la Première Dentition et des maladies souvent trè-graves qui en dépendent ; ouvrage que la Société royale de Médecine de Paris couronne en 1782, et dans lequel on trouve la meilleure manière de conduire et d'èlever les enfans de naissance. Par M. Baumes, Professeur de Pathologie et de Nosologie à l'Ecole de Medecine de Montpellier, et ci-devant Professeur de Medicine et de Clinique de l'Université de Médecine de cette ville ; ex-President et Secrétaire perpêtuel de la Société de Medecine pratique de Montpellier ; Associé de l'Ecole de Medicine de Paris ; Membre de l'Académie de Médecine, de la Société départmentale de la Société medicale d'Emulalion, de la Société Académique des Sciences et de la Société galvanique de Paris ; des Sociétés de Mèdecine de Bordeaux, de Marseilles, de Nancy, de Bruxelles, de Nismes ; des Sociétés des Sciences pe Montpellier, de Dijon, de Vaucluse, du Gard, etc. etc. A Paris, Chez Méquignon l'aîné, Libraire de l'Ecole et de la Société de Médecine, rue de Ecole de Médecine, in no 3 ou 9, vis-a-vis la rue Hautefeuille. 1806

This treatise on First Dentition, which we propose to present to our subscribers in an English version from the pen of Doctor Bond, received the medal of the Royal Medical Society, of Paris, and developes the most approved methods not only of treating the first set of teeth, but also of managing children from the period of their birth. This latter circumstance will commend this volume to the medical practitioner, and also to the general reader ; and we cannot doubt that the re-publication of such a work, together with Koecker's Dental Surgery in the remainder of the present and in the forthcoming volume, will greatly augment the list of our subscribers. But above all the dental practitioner who has the professional ambition to become acquainted with the difficulties attending the development and arrangement of the first set of teeth, and whose benevolence is sufficient to induce him to become a competent adviser of parents on this subject, will avail himself gladly of so easy an access to a vast amount of valuable instruction comprised in a work which has hitherto been a sealed book to the English reader.

There may be some members of our profession who regard the dissemination of knowledge on this and other subjects, with as jealous an eye as they do the organization of Dental Colleges, the promotion of Dental

Societies, and the establishment of dental periodicals in our country.—But there are others connected with the profession of Dental Surgery, as now practiced in this country, and in many parts of Europe, who have sufficient talent, influence and zeal to institute and perpetuate associations, magazines and colleges for the dissemination of useful knowledge, such as the wants of the profession, and the well-being of community so urgently demand :—and these men are resolved that the works of foreign authors, as well French as others, which contain important information, shall be made available to the honourable and educated practitioner, in qualifying himself to survey the entire field of dental science.

Let, then, every highminded member of our profession, come frankly and liberally to the aid of the only periodical known to exist in any of the numerous languages of the earth, for the propagation of those important truths on which our science rests. Let those who wield a ready pen write for its pages ; and let those to whom fortune has entrusted a heavy purse, subscribe for a few copies for private distribution. The bread of charity is never *uselessly* " cast upon the waters." But especially let every practicing dentist in these twenty-six States, co-operate with the publishers by forwarding at least the amount of a single subscription.—If the work be not at present all they could desire, let them improve it by their patronage. Thus shall it never again be said that a calling whose usefulness is so inseparable from the best interests of community, shall be destitute of a single periodical to advocate its cause.

Stockton's establishment for Teeth, Dental Instruments, &c. 243 *Broadway, New-York.*

We would invite the attention of the profession to the above establishment, where, we understand, is constantly kept every article used by the dentist in his practice—such as Porcelain Teeth, Dental Instruments of every description, including every variety of files—an article, by the by, not always easy to procure—Gold Foil, Plate, Springs, &c., Operating Chairs, Desks, and every other fixture needed by the practitioner in this department of Surgery.

The difficulty of obtaining many of the above articles, has been experienced by almost every member of the profession; we are therefore gratified that so indefatigable a man as Mr. Stockton, in whatever he undertakes, has opened an establishment of this kind. It will be a great accommodation to the profession, and we doubt not, will be profitable to the proprietor. To the list of articles which Mr. S. proposes to keep, we would suggest the propriety of adding all the standard works on dental surgery.

THE AMERICAN JOURNAL

OF

DENTAL SCIENCE.

VOL. I.—NOS. XI & XII.

VALEDICTORY ADDRESS

To the Graduates of the Baltimore College of Dental Surgery, delivered at the commencement, March 9th, 1841—BY THOS. E. BOND, JR., M. D. *Professor of Special Pathology and Therapeutics.*

PUBLISHED BY REQUEST.

After the diplomas had been presented by Professor Hayden, Professor Bond arose and said,—

GENTLEMEN,

The time has come when the relation of teacher and pupil, which has for some time existed between us, must be dissolved, and in the name of your preceptors I am about to bid you farewell.

It affords me no little pleasure to believe that our intercourse has been mutually agreeable and beneficial; and that neither you nor we will regret the time and labour of the past session.

You are aware that the Baltimore College of Dental Surgery went into operation under very discouraging circumstances. The difficulty of the undertaking is abundantly proved by the remarkable fact that, notwithstanding the necessity of scientific education in Dental Surgery had long been felt, and the difficulty of procuring it bitterly lamented, no attempt had been made to afford collegiate opportunities to pupils in the art, until the faculty of the present school risked the adventure. It is unnecessary now to enter upon a minute detail of the causes which rendered success improbable. Suffice it to say that the projectors of the school had abundant reason to anticipate open hostility from many, and secret enmity from more. For this, however, they cared but little; but they feared that which is far worse than opposition, the entire indifference of the community to the result of the enterprize.

He who pleads the cause of truth may convert an enemy, and, perchance make him his friend ; but even truth is impotent where it is not heard. Opposition gives warmth and energy to the spirit ; even persecution, as it cannot subdue the soul, may rouse and elevate it ; but indifference presents nothing upon which the mind can act. It has neither incitement for the present, nor hope for the future. It is a very dead sea amidst whose leaden waters the mind may wear out its strength without effect, or even pleasure in the struggle.

To fortify us against these fears of the public neglect, we of course had the common consolation of all who labour for the multitude, viz : the comfortable assurance that if we *would* go on, the public would sustain us. It is to be regretted that those who are most ready to make this pledge for the community are generally such as know but little of the philosophy of public action ; and it is more lamentable that many believe to their sorrow, promises so easily made and so seldom realized. The fact is, the great public, with all deference to multitudinous majesty be it spoken, are much more prone to follow effort than to lead and sustain it. They are, in fact, little better than the campfollowers of enterprize, ever ready to join in the huzzahs of victory for which they have not fought, and to share the spoil they have not won ; and just as ready, should the result be different, to embarrass and insult a defeat they ought to have prevented. From the public, then, we were taught by experience to expect much the same treatment as that they bestowed upon the Vicar of Wakefield's philosophic son George. You may remember that this poor young man, relating his adventures to his father, informs him that to attract some attention, he dressed up three paradoxes with some ingenuity, and published them. " I made no doubt," he says, " that the whole learned world would oppose my systems ; but then I was prepared to oppose the whole learned world." " Well, my son," said the good old Vicar, " and what did the learned world say to your paradoxes ?"—" Sir, replied George, " the learned world said *nothing* to my paradoxes : every one was employed in praising his friends and himself, and condemning his enemies ; and as I unfortunately had neither the one nor the other, I suffered neglect."

To sustain us against the opposition of our enemies, and the terrible vis inertiæ of the public mind, we relied chiefly upon the support of those Dental Surgeons whose approbation is most honourable, and whose influence is most efficient. In this we have not been disappointed.—On the contrary, we have been encouraged, and cheered on by the countenance and sympathy of the most skilful and distinguished of the profession on both sides of the Atlantic. To the medical profession, too, we are happy to acknowledge ourselves under great obligations. From the first, they have been our warm and zealous friends. They have despised the fitful jealousy, so often and so falsely attributed to them, and every where and in every way, they have promoted the success of an infant enterprize. It does not become me to sound the praises of the medical profession; but it is a high minded and generous calling proper for highminded and generous men; and I rejoice to know that many such everywhere swell its honourable ranks.

But amidst the anxiety of a first session, nothing has been so cheering to us as your untiring industry, and the evidence you gave of rapid advancement in knowledge. In the name of the Faculty, I thank you for the comfort and encouragement your deportment has given us; and I sincerely wish, that if at any time either of you should become a teacher, you may have just such pupils as you have been.

Your appearance here to receive from us the strongest testimonial of professional qualification that has ever been bestowed upon a Dental Surgeon, is sufficient evidence that you have not attended in vain to the instructions we have endeavoured to impart. After having admitted you to the honor of a degree—an honor the dispensation of which has been committed to us by the State of Maryland, and which we are bound in good faith to bestow upon none but those who deserve it, it would be supererogatory to expatiate upon the confidence we have in your ability to give credit to the institution that presents you to the world as its first fruits. We can add nothing to the solemnity of the act by which we have recommended you to the confidence of the community; nor indeed is any additional commendation necessary. Wherever you go, whether in Europe or America, the diploma you hold in your hands will be a passport to public consideration, and an abundant introduction to usefulness. You have been taught that Dental Surgery is not a mere art separate from, and independent of, general medicine; but that it is an important branch of the science of cure. Inquiring into the diseases of the antrum alone was sufficient to convince you that the teeth and their dependencies are often primarily interested in the production and aggravation of some of the most fearful and fatal of human disorders; and you have at once been compelled to discard the miserable fallacy, that the teeth are mere supernumerary organs, not at all concerned in the general health, and capable of being maltreated at the pleasure of ignorance, without inducing serious results.

Your knowledge has been based upon extensive and accurate anatomical investigation. You have seen and traced out the exquisitely beautiful machinery by which the organism is every where knit together. You have learned the secrets of nervous communication, and studied the simple yet admirable arrangement by which nutrition is drawn by each part from the common receptacle of strength. You have also carefully examined the phenomena of health and disease, both as they are manifested in the dental arch, its connexions and relations. Your attention has been particularly directed to the effect of local irritation upon the general health, and you have seen how readily organs apparently unconnected, and independent may be involved in mutual disease. You have been taught to regard the human body as one complete whole, united in all its parts, and pervaded every where by strong and active sympathies; and your principles of practice have been carefully formed upon a sound knowledge of general medicine.

I trust, gentlemen, that in the course of enquiry in which we have been employed together, we have learned something more than mere physical truths. We have been busied in examining the most equisitely beautiful and wonderfully perfect of all machines: we have wondered at the skilful contrivance by which various complex and highly delicate organs endowed with exquisite sensibility, and liable to disorder and decay, and bound up together so compactly as to occupy the least possible space, and yet so securely as to work on in their several positions for years without pain or injury,—notwithstanding the careless and violent motions of the body. We have observed how perfectly, as by some intuitive power of choice each organ performs its own appropriate work, none ever mistaking its duty. The same blood is sent to the different secreting organs, and by an admirable and inscrutable arrangement each separates from it the substance peculiarly its province to take away, at the same time that all are nourished and sustained by it. A perfect understanding seems to exist among the different parts of the body, which enables them to move on harmoniously in their closely connected, yet separate labour. These and a hundred other admirable and inexplicable marks of infinite power and wisdom, we have been privileged to observe and reflect upon. Can it be that we have admired the workmanship and thought not of the Almighty and all-glorious workman? Have we trembled to behold how wonderfully and fearfully we are made, and remembered not the Being upon whose will alone our life depends?—The heavens declare the glory of God and the firmament sheweth—His handy-work! but these glorious works are not worthy to be compared with the mysterious fabric which is at once the dwelling place and the instrument of the spirit of man! They are inert, unconscious matter: the body of man is endowed with life, and with the grand and effective power of will! Nor do the glorious sun and burning stars teach all the great truths which may be read in the minutest tissues of the human frame. It is indeed delightful to raise our eyes from the earth to those pure creations of God, which only of all His visible universe remain unsullied by sin. There they shine forth in the beauty of their original brightness, enlightening the world their undimmed radiance condemns, as though they would at once reproach the guilty earth and woo it back to purity. It is well to gaze upon them, for God has hung them out in the heavens to light up the approach to his throne. From age to age they testify of His holiness, and His power. But alas! they tell of endurance, of unfading glory, and man needs lessons of decay and death. They witness the revealed truth of creation; but man needs to be confirmed in the dreadful revelation of the fall. Let him then study the striking combination of this appalling truth as he finds it recorded in the condition of his own body. Here the philosopher will find the striking anomaly of a perfect work fully adequate to its ends; and yet full of imperfection in its operations. He will see, too, a body dying from birth; yet sustained by an unseen power through the various stages of life. The human frame as it presents itself to our observation, is an inexplicable riddle—a bundle of inconsistencies until explained by the Holy Book. When we survey the perfection of its plan, and the exact management for the performance of every part of its details, and then observe that there is superadded to this, an every-where watchful and powerful ability to remove difficulty and repair damage, we might naturally suppose the machine to be indestructible ; but when, made aware of its liability to disease and destruction, we remark the extreme delicacy of its tissues, and learn how very slender is the membrane or ligament that intervenes between life and death, we are again lost in wonder, that a machine so complex and delicate, and prone in every part to dissolution, can be made to survive the rough usage of life for an hour. In a word, the human body is a standing witness to the truth that it was once perfect, and subsequently has been blighted. Nothing but the power of the omnipotent God could have created it, and nothing short of the same Almighty agency could remand it to the dust. If the study of anatomy thus teaches the doctrine of the creation and the fall, its physiology and pathology abound with evidences of the benevolence and mercy of God.

To the observing eye, it is every where evident that the Great Being has tempered his justice with mercy. If He has condemned us to death, He has made provision for length of life abundantly sufficient for the purposes of temporary existence, and sufficiently short for the patient endurance of its sufferings. If He has cursed the body of man with the necessity of pain, He has distributed sensibility so benevolently that pain itself is become a blessing without which life would be a succession of horrors and alarms. He has made it an unwearied and faithful sentinel upon the outposts of life ; ever ready to give warning of danger, or to summon the reparative powers to the aid of a wounded or suffering organ. The mother who sighs over her infant writhing in pain seldom thinks how much both she and her child are indebted to its power of suffering.

Yet without it, disease might have destroyed the unconscious babe before maternal vigilance could have detected the existence of disease. The pain she deplores is the watchman more vigilant than she, that gave the alarm in time to repel the danger. The most watchful nurse unconsciously abandons her helpless charge to the sleepless fidelity of this friendly yet harsh protector, and slumbers with perfect security by the side of her infant, well assured that at the first approach of want or danger, she will be roused to its assistance.

The sense of pain has not been capriciously interwoven with our organism. On the contrary, it has been most carefully located with evident reference to our convenience and our safety. The skin which covers the whole body, and is of course exposed to the first impressions of external agents, is endowed with the greatest sensibility. It is the first great outpost to the system, and is therefore necessarily intrusted with the power to distinguish the slightest approach of evil, and to send the alarm to the inmost recesses of the body. But, contrary to the common opinion, the deeper an organ lies, and consequently the less exposed it is, the less is its sensibility to pain ; and the bones which have nothing to fear from external injuries, except such as must first spend their force upon the sensitive organs that envelop them, have scarcely any sensibility at all.—Are these not evidences of wisdom, of benevolence, of mercy? Do they not loudly reiterate the doctrine of revelation: — that God has cursed, and yet loves the body of man? Will we be told that the superior sensibility of the skin, is a mere accident of formative power, or that it results from the peculiar exposure of that organ to exciting and irritating causes? Facts disperse the supposition, even if it were possible to conceive of any other formative power than God. The location of pain has evidently not been determined upon any general rule. When any part of the integuments is of a character that would render sensible a most fearful evil, sensibility is witheld. The hair, for instance, has no sensibility. Is this a mere accident? Think for one moment if you can, of the dreadful condition to which man would be reduced by the transfer to the hair of the sensibility of the skin. It would of course grow to a great length. Every fibre of the mass would soon become irritated and inflamed and the seat of agony. It would be impossible to remove it without a most painful surgical operation. And yet life would be insufferable if men were compelled to drag behind them a tangled mass of disease which filled the whole frame with exquisite agony. So we might remark of the nails. The apparently trifling provision of God by which these are made insensible, is in truth a provision absolutely necessary to the smallest degree of comfort to man. It has often been said that the study of medicine inclines men to infidelity. I am sure this is not the case. On the contrary, I am happy to believe that there are comparatively very few in our profession who do not believe in God and in his word. It is true that the study of science will not necessarily prevent a man from disbelieving—for pride, which is the seed of scepticism, is able so to stultify the mind that it becomes impenetrable to evidence.—But where a student of medical science does become so lamentably stupid as to be unable to realize the being and the character of God, depend upon it his dark condition has been brought about not through medical knowledge, but in spite of it.

I am aware that French and German atheism has laboured hard to make Anatomy, as well as other branches of science, instrumental in sustaining and propagating its silly and heathenish notions. And never has ignorance made more awkward and ridiculous efforts to appear wiser than when gravely philosophizing upon the human body.

If there is anything more sagely fantastical than another, it is sceptical transcendental anatomy. Folly here, seems more than commonly foolish; and as Cicero said of the Roman augurs, we may well say of the transcendental anatomists, that it is strange how two of them can look at each other without laughing. Their theories exhibit little else than learned stupidity decked out in the robes of science.

Time will not permit me to dwell longer upon this subject. So far as you are concerned, I am sure that no argument is necessary to convince you that medical science nowhere contradicts divine revelation; but on the contrary every where confirms and proclaims the truth of the Holy Book; and I trust that there are none in this audience so unfortunate as to have yielded credence to the smatterers in knowledge, who find upon the very surface of speculation what seems to them conclusive evidence that christianity is a fable, and all the wise and good who profess it, either charlatans or fools.

I trust that our confidence in our faith is too well grounded to be shaken by the clownish attempts of physiologists to explain away the necessity of a creator; or by the crude and illogical conclusions of the geologist who refutes Moses by an essay upon oystershells; or yet by the deistical theologian who assures you, with great gravity, that a miracle is altogether unnatural, and very rationally explains the angelic annunciation of the birth of Christ to the shepherds, by supposing that they were humbugged by a wandering Bethlemite with a lantern!

Truly, gentlemen, a little knowledge is a dangerous thing—and moreover it is a very presumptuous and noisy thing. The character of modern infidelity, whether anatomical, geological or theological, may be written in three words, '*Vox et præterea, nihil!*'

Gentlemen, you are now members of a useful and honorable profession. You go forth to the world with high testimonials of character and skill; and we have a right to expect from you such conduct as will reflect honor upon us and upon the profession you represent. A greater than ordinary responsibility rests upon you. Under any circumstances the honor and dignity of any profession is intimately connected with the deportment of each of its members; and that man is a traitor to his brethren, and a libeller of his class, who by his negligence or vice, degrades the pursuit or the profession in which he is engaged.

But the circumstances under which you commence your career are of rare occurrence, and involve you in responsibility which seldom falls to the share of two young men. This day, for the first time in the history of the world the practice of dentistry is legally recognized as a profession, and you are the first who are permitted by public authority to be distinguished by the title of Doctor of Dental Surgery. As soon as you go out in the world, the very title you bear will subject you to scrutiny, as close as jealousy and envy can institute. Your conduct will be subjected to the most microscopic investigation, and your errors magnified and multiplied by all the appliances of scandal. You will require more than ordinary virtue and circumspection to enable you to sustain the trial, but should you fail under it you may inflict irremediable injury upon the profession you have chosen, and which is now struggling for a dignified position in the public estimation. Let me beg then that from the very first you will assume a dignified stand, and that you will religiously maintain it. Arm yourselves with a fixed determination to do honour to the title you bear—to give it honour in the eyes of all men, and to force even the most invidious to respect it.

Your titular distinction is founded upon admitted superiority of knowledge; but you must remember that it will require continual diligence to maintain that superiority. The science of medicine is ever improving—hundreds of active and intelligent minds will soon be devoted to the improvement of that branch of the healing art to which your attention will be chiefly directed ; and unless you continually add to your present stock of information, you will soon find yourselves distanced by those who are now but tyros in knowledge compared with you. The expression—" I have finished my education," does well enough for the finished gentleman and gentlewoman in their teens, who have learned science by questions and answers in boarding schools ; but it is the height of folly for the *student* to talk of having learned enough. To him, every acquisition in knowledge is but the threshold of higher attainments ; and when he is looked upon by others as wise, he feels that he has learned but the rudiments of wisdom. Be diligent, then, both to acquire information, and to impart it ; feeling it to be your bounden duty, as well as your pleasure, to contribute what you can to the improvement and dignity of the profession you have assumed.

But, gentlemen, learning alone will neither make you extensively useful nor respectable. A notion has some how or other got footing in the world that superior knowledge is most respected when associated with rude and vulgar manners ; and as the latter supposed qualifications of genius are much more easily acquired than the former, we are abundantly supplied with professional bruinism. Now, gentlemen, this notion is sheer nonsense. Dr. Johnson would have been quite as learned, and far more respectable if he had been a gentleman ; and Mr. Abernethy would have been quite as eminent a surgeon, and a far more useful man, if he had not studied clownish deportment. I know that it is common to call the rudeness of the learned by the milder name of eccentricity ; and many who are not learned would fain be odd, and enjoy the enviable distinction of doing things which gentlemen do not generally do. Now, gentlemen, when I hear a man spoken of as eccentric, I either pity him, or despise him, as I have reason to believe his deviations from propriety to be the result of nature, or of study. If they are not natural, the man is insane precisely to the extent that he is odd ; and generally his eccentricity ends in serious aberration of mind : of course I pity him as a sufferer from this most fearful of afflictions. If he is not mad, I cannot but despise him for being such a fool as to take pains to pursuade people that he has less than common sense.

Depend upon it, gentlemen, that a polite and benevolent deportment is becoming to all men, and grateful to all men. Indeed, it is the duty of every man to be kind and courteous to all with whom he has to do ; and *he* is altogether inexcusable who is habitually impolite. By politeness, however, I do not mean obedience to certain conventional rules which regulate the intercourse of the frivolous and the fashionable ; but I mean that active benevolence which strives always to create as much comfort and happiness as possible, and thinks no sacrifice too great, and no attention too small, which may contribute to this end. It is highly necessary for your own happiness and the comfort of others, that you cultivate this spirit. And I would especially beseech you to be careful to exercise it towards those practicing dentists who have not enjoyed similar advantages with those you have had. Never presume upon your superior acquirements, so as to lead you to treat them with disrespect, unless you have reason to believe that they are mere empirics who are abasing the confidence of the public. To all worthy men, whatever be their attainments, who are engaged in the practice of dentistry, behave with kindness. Give them what instruction you can. Try to stimulate them to acquire more knowledge, than either you or they possess. Give them credit for all that is commendable in their practice, and be silent to all but themselves about any errors they may have committed. Let it be a rule of your life; and endeavor to make it the disposition of your hearts to speak evil of no man—except in such case as you are well convinced that greater evil would result from your forbearance.

You will doubtless meet with many instances of flagrant imposture; and you will be vexed by the success of ignorance and impudence in deceiving and robbing the credulous and the unsuspecting. In such cases your duty is plain. Whenever you can disabuse the public mind, or prevent injury to an individual you should not hesitate for a moment to do so, without reference to the consequences to yourself. But where you have no reason to believe that your interference would prevent mischief, let it be impressed upon your minds that it is no part of your duty to make war upon scoundrels. You are not expected to be public executioners. To chastise roguery and to expose ignorance wherever you may meet it, would require the hundred hands of Briareus and the industry and strength of Hercules. I know that the success of quackery and effrontery is trying to the spirit of an honest man; but I have learned that nothing is to be gained by fretting about that which we cannot help. Men have been cheated by quacks and charlatans from time immemorial, and will be so cheated after you and I have ceased to observe it. The passion for nostrums is too strong for reason. You could as easily knock down a pyramid with your fist as to prevent people from swallowing Pease's Candy, or having their teeth filled with mineral amalgams. In a former lecture, at which you were not present, I took occasion to dwell at some length upon what might be termed the philosophy of empiricism, and endeavoured to show that it was inseparable from the present condition of the public mind.

The success of quackery in our land is indeed one of those strange things that, at first sight, appear to baffle philosophy, and to present to the curious investigator the anomaly of a thing done in contrariety to apparently well known circumstances that should have prevented it.

We have been in the habit of supposing that empiricism is but one mode by which the cunning prey upon the simple; and that its success must be proportionate to the ignorance and mental inactivity of the people upon whom its arts are practiced. This being the case, we are astonished to find that quackery of the grossest character feeds and fattens upon the American people, whom we reasonably believe to be the best informed and the most thoughtful of all the communities of the world.—Moreover, although the fact is well ascertained that the general intelligence is progressive, yet imposture seems to grow with the growth of mind.

These facts are the natural and philosophical results of something.—There is reason for them, and upon reflection upon these things, we may learn some unexpected truths in the philosophy of mind.

Perhaps the true way of getting knowledge is to reflect upon every thing that we do not fully understand. By investigating thoroughly even the follies of mankind, we may acquire much correct information concerning human nature, and our own nature, as human.

The history of quackery, whenever it shall be written, will be exceedingly entertaining and instructive. It is remarkable that as far as we have any knowledge, empiricism has been practiced in all ages upon precisely the same principles, and with much the same results, as it is at present. There must be a charm in taking physic, which only the takers know, for the Arabians and the Greeks have opened their mouths to much the same drugs and drenches that are swallowed with such gusto by the modern patrons of vegetable pills and health-preserving potions.

By tracing the history of empiricism, we find that it has always been of two kinds, founded upon two different characters of people among whom it prevailed.

There are two distinct tendencies in the human mind which are opposed to one another, and yet may be made to produce much the same results. These are—*Superstition and Credulity.*

Dr. Paris has defined these two principles thus: "*Credulity* is an unbounded belief in what is possible, although destitute of proof, and perhaps of probability. *Superstition* is a belief in what is wholly repugnant to the laws of the physical and moral world."

Now, in times of gross ignorance, men are always *superstitious;* but they are so far from being *credulous*, that it is difficult to obtain their assent to the result of any process of clear reasoning, if that result be different from their previous notions. On the other hand, when intelligence is widely diffused, and the mind is worked up to enquiry, *superstition* loses its hold. Men are apt to refuse assent to every thing that does not profess to be the result of human research; but at the same time they are abundantly ready to believe the most absurd propositions if they present themselves as the fruit of experiment, or the result of human effort. In short, while they have no faith in the production of ends by means not understood, they have unlimited confidence in the power of means to bring about ends the most extraordinary.

Credulity, therefore, waxes, as *Superstition* wanes.

Thus the rulers of the French nation, after having thrown off the shackles of superstition with such mad violence, as to tear away with them all reasonable faith in the supernatural, became so exceedingly credulous, that they were readily imposed upon by the extremely stupid fooleries of Anarcharsis Clooty, the embassador of the human race.

The same experience that leads men to throw off all faith in pretended miracles, makes them acquainted with so many extraordinary results, developed by the power of mind, that they do not know how to limit their expectations of success in the various branches of human pursuit.—Being often disappointed, by the performance of things they had thought impossible, they cease to reason upon probabilities, and learn to think all things possible.

Together with this state of the mind, there grows up a fondness for novelty, which being continually fed, becomes imperious and seizes with eagerness upon whatever food may be presented to it.

Let us illustrate these remarks:

The American people are not *superstitious*. The Africans, though superstitious, are not *credulous*. Yet the former are as readily deceived as the latter. You could not persuade the American people that a man's eyes had been miraculously opened to behold the inhabitants of the moon; but it would require little effort for an Obi-man to persuade the savage African of this. On the other hand, you could not make the African believe that a man had invented an instrument, without supernatural assistance, by means of which he could see the inhabitants of the moon; yet a large portion of the American public actually did believe this, upon no better authority than the assertion of an anonymous newspaper writer. An American would not believe that a physician could make a charm to prevent disease; an African could not be persuaded that cold is the cause of all diseases; or that the activity of medicines is proportioned to the diminution of the dose. The American would not wear a fetish; the African would not trust himself in the steam-bath of a Thomsonian, and would laugh at the solemn fooleries of Homœpathy.

In short, the difference between us and the savage, with regard to imposture is, that we require to be cheated into a belief of the wonderful; while the African, having no faith for what is merely extraordinary, offers no resistance to the reception of the marvellous.

Now, quackery has always taken the color of the age in which it prevailed, and has appealed to *superstition* or *credulity*, accordingly as one or the other was paramount in the public mind. So true is this, that were other items of history absent, we might form some correct opinions of the character of a community from a knowledge of its empiricism.

Rhazes, a celebrated Arabian physician, has left a description of the quacks of his day, which shows clearly that the Arabians were then a credulous rather than a superstitious people; and by inference we may safely conclude that they were to some extent, intelligent and active.—Indeed, they were at that time the most enlightened and learned people in the world: and having thrown off the shackles of Paganism, were but little inclined to superstition. Yet they had their share of quacks, who seem to have been very ingenious in their impostures, much more so, indeed, than are some who gull us so easily. Some of them professed to cure epilepsy by pretending to make an opening in the posterior part of the skull and removing something from the brain. Others cured certain disorders by extracting little lizards from the nose. This they effected by dexterously inserting an artificial animal, and then withdrawing it. Others extracted little frogs from beneath the tongue, which they managed in a similar way. Others, again, attributed their patients' maladies to the presence of glass, or other foreign bodies, which they had swallowed, and which, in fact, the quacks pushed down the throat while pretending to examine it.

All this may appear to us very silly; but it required more dexterity and talent to impose upon people in this way, than ever was manifested by the stupid, yet successful empiric, Sweet, who told all his patients that their hips were dislocated, and pretended to replace the bone in its socket by a gentle manipulation causing no pain or scarcely any sensation to the subjects of the operation.

You will perceive that all the modes of imposture related by Rhazes, were addressed to the credulity of the people.

While these impostures were practiced in Arabia, the Europeans were sunk in gross darkness and ignorance, and of course were the slaves of Superstition. Quackery abounded among them too, but it addressed itself, not to their credulity, but to their superstition. Indeed, medical science was overgrown, and almost lost amidst the luxuriant growth of empiricism.

Experience and philosophy were no longer the bases of practice; witches and wizards, and the monks were the doctors, and charms and amulets, and holy water formed the remedial agents. The competition between medical theories for the greater part, narrowed itself down to the rival claims of good and evil spirits; and the wise no longer disputing about the nature of disease, transferred their secreting to the supernatural agency by which it was brought about. For some time, there was a hard contest between the devilists and monks; but the latter appear to have been outnumbered, and Satan established his supremacy as a quack, over all opponents.

Godelman, Cardan, Arterius and others, contend that Satan was the best physician, upon the ground, we suppose, that as he created diseases, he knew best how to cure them. But some did not confine his skill to such disorders as he and his imps had made. Nicholas Taurellus says,—"Many doubt whether the devil can cure such diseases as he hath not made; and others fully deny it: however, *common experience* (see how naturally all empiricism appeals to experience for support against common sense) confirms, to our astonishment, that magicians can work such feats, and that the devil can, without impediment, penetrate through all the parts of our body, and cure such maladies, by means to us unknown."

The fact of the devil's skill, being thus fully ascertained, like the powers of quack medicine in our day, by experiment, the other party raised a question, whether it was lawful to apply to the evil one for relief, when the saints were too busy or were unwilling to grant it. Various divines and schoolmen denounced Satan's practice as abominable, and declared that it was better to die than be cured by him. Paracelsus, however, and doubtless many other utilitarians, agreed rather impiously, that it mattered very little to a man, whether he were cured by angels, or by unclean spirits, so that he were cured. He says,—"If a man fall into a ditch, what matter is it whether a friend or any enemy help him out? If I be troubled with a malady, what care I whether the devil himself, or any of his ministers redeem me?" piously adding, however, that these things could only be done by God's permission. Paracelsus therefore recommends incantations for the removal of disease, while various divines ran an opposition line of adjuration and exorcism, by fire, suffumigations, lights, cutting the air with swords, sacred herbs, odours, &c.

Some of the remedies got up by quacks and extensively used at that time, are almost too absurd for belief. A ring made of the hinge of a coffin, cured cramps. Nails driven in an oak tree cured tooth-ache. A halter that had served for hanging a criminal was an infallible remedy for head-ache, if tied around the head, or better if beaten to powder and used as a snuff. The chips of a gallows tied up in a bag, and worn round the neck, was famous for the cure of ague, and a stone with a hole in it was infallible to prevent witches from riding men and horses.

It is remarkable that some of the superstitious practices that arose in the dark ages, are still continued among us without any reference to the original design for which they were introduced. Coral, for instance, was once considered very powerful in keeping off the evil eye, and scaring mischievous spirits. For this reason it was worn as an amulet; and Paracelsus tells us that it should be constantly hung around the neck of infants to preserve them against fits, charms, &c. It is still used for necklaces and toys for infants, though few are aware of the important advantages the little things derive from it.

When letters began to revive, and superstition to decline, empiricism took the color of the age, and credulity was appealed to by ingenious quacks.

There is one case upon record, however, which appears to be a sample of abnormal quackery, for the impostor founded his expectations of success, neither upon the prevalence of superstition nor credulity, but simply upon the fears of the people.

In the year 1760, a mad soldier of the guards, in London, predicted a terrible earthquake, upon which a bold speculator in panics sold a vast quantity of pills as being good for earthquakes ! So says the record,

"I know not what the truth may be,
But tell the tale as told to me."

Dr. Tissot, a Swiss physician, in a work pulished in 1760, has an excellent chapter upon empiricism from which we learn, that among that intelligent people, the same sort of quackery prevailed, as prevails here at this day ; viz : the quackery of credulity. His description of empirics might be stereotyped for all ages. He says " They are constantly vile wretches, who incapable (or unwilling) to make a livelihood in any honest way, have laid the foundation of their subsistence, upon their own amazing stock of impudence, and the weak credulity of the people. They have no scientific knowledge ; their certificates of cures are so many chimeras or forgeries, and in short, if among the prodigious multitudes of persons who take their medicines, some of them should recovef, which it is almost physically impossible should not sometimes be the case, yet it would not be the less certain, that they are a pernicious set of men. A thrust of a rapier into the breast, has sometimes saved a man's life, by seasonbly opening an abscess, yet wounds with a small sword, are not desirable on this account."

In our own time and in this community, empiricism is as successfully resorted to, as it has ever been in any age or among any people.

There are several classes of the community, upon whose patronage the quack may always reckon. The first consists of that miserable class, who live in perpetual dread, and daily die a thousand deaths in fearing one!

These poor people, are ever imagining that they feel within them, the first tremblings of dissolution, and their confidence in the powers of medicine is generally in increased proportion to their confidence in their own vitality. These are like the horse-leech, ever crying "give!!" Their capacity is boundless. Potions and pills, pastes and panaceas, all find their throats an open highway. Their ability to receive, cannot by any possibility, be exhausted, for they feed a phantom. Like the man who imagined he had a wolf within him, that could never be satisfied with food, these unhappy creatures have an imaginary inmate that is insatiable.

There is another class who are too wise to be cured by ordinary means. There are many, generally persons of weak minds, who have a raging desire to be doctors, and as they are excluded from the rank of the regular profession, either by their sex or by their ignorance, they naturally become at once the apostles, and the prey of quacks.

There is another class, unfortunately always a large one, who labour under hopeless disorders, and are anxious to try every thing that promises relief. These are sincerely to be pitied. They are the severest sufferers from empiricism.

There is still another class, though perhaps a small one, who are absolutely amateurs of physic. They are neither driven to it by imaginary disease, nor by real suffering, but they seem to take it by way of amusement. I know some that regularly take all the new physic that comes out. Thomsonianism and Homœpathy, have equal charms for them, and Dutch doctors, and Indian doctors, are blessed by their equal confidence.

I have spoken of the present as a credulous age. I now add that it is not a *wise* one—with all our pretensions to intelligence we are not a *wise* people. The history of every day proves this. We live in an age of *talent*, and we are a *talented* people. This is our characteristic, and not wisdom. There is a great difference between talent and understanding. Underderstanding *conceives* a plan, *talent executes* it. Talent is the efficiency of a man; the power to perform what he wills. Now, we have this power in an eminent degree; but as a people, we do not think, and reason, and determine correctly. The whole energies of the people are directed to increase and develop talent, not to gain wisdom, to multiply the powers of action rather than to establish sound principles whereby to direct them. This indeed is the condition of the whole enlightened world; and it grows out of the fact that in the present state of the human mind, men find it easier to study what is external and visible than what is metaphysical.

We regard the present as a transition age—the age of talent, yet to be followed by the age of truth.

There are certain usages established among medical men, which are highly honorable, and indeed, absolutely necessary to the preservation of the dignity of the profession. The first that we shall mention, has reference to their treatment of one another, and is commonly styled medical etiquette. Now this etiquette is something very commonly misunderstood by the public. They seem to think that it is a formal code of quixotic regulations, altogether unnecessary, and very troublesome to patients, and there are not wanting men who bear the honorable title of physician, who for the advancement of their own little ends favor this opinion.—Now, gentlemen, the truth is that just so far as a man is honourable and upright, he will be a strict observer of these rules, and you may lay it down as a rule, that a physician who disregards or rails at medical etiquette is a mean, selfish, skulking fellow, who in his heart neither fears God nor regards man. This expression may seem harsh, but it is true, for medical etiquette is nothing more than professional observance of the golden rule, 'do unto others as ye would that they should do unto you.' It teaches that physicians are brethren, equally exposed to the many unpleasant things connected with a most anxious, laborious and often ill requited profession; equally subject to caprice, to unjust suspicion, and to unmerited censure, and hence bound together by sympathy which they can look for no where else. It bids them to sustain each other in the time of trial; to bear one another's burdens; to make the reputation of each other the care of all; and thus in every possible way to smooth the thorny road of professional life. It is strange that the public cannot see the beauty and propriety of these regulations; but I trust that you can see and appreciate them; and in this the last charge I shall ever give you, I urge you to regulate your intercourse with your professional brethren upon the strictest principles of medical etiquette. There is another usage of medical men, which is exceedingly important, and for the practice of which the public are much more indebted to them than they appear willing to acknowledge. I allude to the custom among respectable physicians and surgeons to make known as widely as possible any discovery or improvement they may make in medicine. What knowledge of medicine we have is chiefly that we have received from those who have gone before us; and it is doubtlesss the duty of every medical man to add what he can to the common stock of knowledge. It is by the observance of this rule that medical science is daily expanding and improving. It is by self-denial, amounting in some instances to heroism, that the public are indebted for the cure and prevention of many fearful disorders. Yet how ungrateful are the public for the sacrifices thus made! What an immense mine of wealth was Jenner's discovery of vaccination, if he had kept his secret! He could have drawn to himself almost any portion he might have asked of the wealth of Europe. Kings would have knealt at his feet and besought protection from the frightful malady that mocked their greatness; and the rich would have poured out their treasures for the priceless secret. But what would the world have lost by his selfishness, if Jenner had considered the discovery as his property. I might mention other instances of the kind, that would show the immense obligation under which the public are placed by this noble rule of professional conduct. But how have they behaved? Have they rewarded and reciprocated the generosity of physicians? No, indeed. On the contrary, they offer premiums to secret nostrum-mongers. They reward by their confidence and their money those who are continually abusing and throwing contempt upon medical men. They will pour thousands into the lap of a candy maker, and do all they can to insult and injure their real benefactors. I own, gentlemen, that this conduct is well calculated to drive physicians from the honorable stand they have taken, and to make them secret mongers too. But I trust it will never be so. If the public do wrong, let us do right,—our duty is plain—and let us remember that he who hesitates between duty and inclination is undone.

There is still another usage of physicians which I would that you should imitate. It is our custom to decline receiving any compensation for any professional services we may render to one another, and to Ministers of the Gospel. With regard to the first, it is founded upon the spirit of brotherhood, and is a part of the system of reciprocity of which I have spoken. The second is a mark of respect to Clergymen—but is far from being gratuitous. The Clergyman is every man's servant. His time is appropriated by any one who may wish his counsel or instruction. Without fee or reward, he is required to do a great deal of arduous and unpleasant labor. It is but right, therefore, as he is always ready to visit us in our afflictions, we should be equally willing to minister to him.

There are many other things of which it would have afforded me pleasure to have spoken; but as I cannot do so at length, I will detain you but a moment longer.

You are about to go forth to practice a useful art. Let it be your study to practice it in the spirit of benevolence. Go about doing good—alleviating suffering, and restoring health to as many as you can. Be glad to distribute of the good that you possess—a possession far more valuable than wealth, as it will enable you to promote the happiness of your fellow men, more certainly and in a greater measure than riches could do.

And, gentlemen, remember that for the proper use of your abilities and opportunities, you are directly responsible to God. *He* has never alienated from himself what he has bestowed upon you. He is the owner of your time and talent—your reason and your information. It is a fearful mistake to suppose that none are the stewards of the Almighty beneficence but those whom he has entrusted with money. There are powers, in comparison with which gold is insignificant, and with regard to all these the great Creator permits us to occupy only until He shall come to judge of our fidelity. Whatever we do, let us do it as unto Him—looking for his approbation, and walking in His precepts.

The profession you have chosen is not to be regarded merely as the means of your employment and creditable subsistence. It is to be the means of your mental and moral discipline—the mode of your probation—the form of your accountability. If you regard it as a mere worldly occupation, and enter upon it in the spirit of fallen self-love which men call selfishness, and which is the great antagonist sin, that everywhere opposes itself to Divine Benevolence. You will find it a pursuit full of vexation and disappointment; and in the eve of your lives will look back upon it with dissatisfaction and disgust, as a successful fraud upon your happiness. But if you enter upon it with cheerfulness as the way in which you are to employ your talents and your time—under the direction of God, to the good of yourselves and others, and especially to the glory of Him to whom time and talents belong—you will not fail to find in the practice of your profession a fund of enjoyment which will increase with the effort of every day.

Gentlemen, we now must take our leave of you. We cannot accompany you in your struggle with the difficulties and dangers of life. In your prosperity, we shall not be near you to warn you against presumption; and in adversity, we shall not be at hand to comfort and sustain you. A thousand circumstances necessarily limit the power of friendship—and render human sympathy valueless.

But in parting from you, we would affectionately remind you that there is a counsellor and a friend whose presence and whose wisdom will never fail you. To him we fervently commend you; and with our parting words we urge you to make his word your closest and most intimate companion. You will find in it all that you can ever want of advice and consolation. It will be a refuge in trouble, a shield in defence—an unfailing counsellor, and a sure guide to happiness!

Gentlemen, I bid you farewell.

We hope that no one of our subscribers will lose any time, after the arrival of this number, before he reads with attention the excellent, or rather super-excellent, valedictory address, by Professor Bond, of Baltimore, to the graduates of the "Baltimore College of Dental Surgery," at the termination of the courses of Lectures last winter. The practical utility of such a production, can never be limited to the class to which it was first communicated; but its influence will be important and salutary on every well disposed an intelligent mind in our profession. Dr. Bond is not indeed a dentist; but as one of the Professors in the only Dental College in existence in this or any other country, his philosophic views of professional character and duties, will be universally gratifying to the profession, to the usefulness of which he has consented to devote a portion of his time and talent. If his other lectures of the course partook of the strongly marked talent, so manifest in this Valedictory, and if his associate professors manifest a corresponding zeal and ability, it cannot be denied by the most fastidious among the opposers of Dental Societies, Magazines and Colleges, that the young gentlemen who enjoy the advantages of such instruction as that given at this institution, have occasion to congratulate themselves on their peculiar good fortune. S. B.

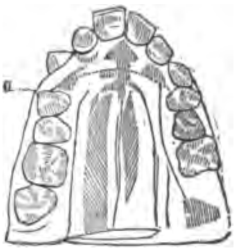
From La Lancette Francaise, Paris, Saturday, 14th November, 1840.

TRANSLATED BY J. J. GREENWOOD, 71 WARREN-ST., NEW-YORK.

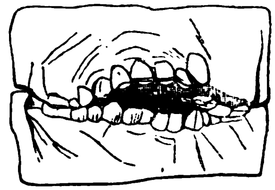
1st. The anomalous developments of the anterior portion of the superior maxillary bone,—the great obliquity and prominence of the incisive teeth of that bone, and the remedy after two months' treatment. By Mr. Brewster, Surgeon Dentist.

2d. The retraction, on the same subject, of the upper lip: the section of the myrtiform muscle, and the cure.

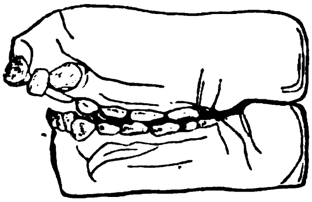
Miss S., a young English lady of about sixteen years of age, of a strong constitution, and enjoying excellent health, was presented to Mr. Brewster by her family under the following circumstances: The anterior teeth of the superior dental arch presented a considerable obliqueness in front. This obliquity was so positive, that the teeth offered to view almost a horizontal position. The alveolar process in all its incisive portion, so projected itself in front that the cutting edges of the inferior incisors represented upon the accompanying figure by the punctuated lines *a a*, was removed almost two centimetres (about 5-8 of an inch) from the cutting edges of the corresponding superior incisors of the upper jaw.



This so rare a deviation of the alveolar circle (for it is almost never observed even in any case of the projections of the teeth, where for the most part the crowns are carried forward, and the roots themselves preserving three nominal positions) gave the jaw so unnatural an appearance that the visage had the most repulsive aspect, as can easily be deduced from the figures, which are the exact transcripts of the models taken from the patient.



This deformity presented other inconveniences, viz: the teeth could not come in contact, and the result was an enormous opening, which was an obstacle to masticating alimentary substances, and to the proper pronunciation of a great number of words.



This projection of the maxillary bone and the teeth, had produced by its long standing, a lifting up of the upper lip, amounting almost to an overlapment, (or folding upon itself) strongly sustained and bound under the fibrous cartilage of the nose.

The myrtiform muscle had entirely lost its mobility, so much so that the lip, although perfectly developed otherwise, could in no wise fulfil the functions to which it is destined during mastication, and while pronouncing a great many of the consonants. In a word this young lady could but poorly perform the operation of mastication, and was much more deficient in that of pronunciation. The palatine vault somewhat straightened and laterally devious, added still to these difficulties already too obvious. Under all other points of view, Miss S. was of an agreeable form; her features regular; her eyes beautiful and expressive; and notwithstanding these combined advantages—her education, her agreeable disposition, and the rich reversion which awaited her as the sole heiress of an immense fortune, she was thus destined to bear up against the perpetual mortification and endurement of this hideous infirmity.

Under these afflicting circumstances, her parents who were continually travelling for many years in the different countries of Europe, did not fail to apply to the most distinguished dentists of those places they were visiting; and those especially of the great cities of England, of France and of Italy have no doubt a recollection of having seen Miss S. All those practitioners were of the common opinion, and fully agreed in the impossibility of giving any assistance except by the operation which consisted in nothing less than the extraction of all the incisor and canine teeth: that is to say, removing six sound and healthy organs, and which being placed in order, and occupying their *proper situations* would of themselves become beautiful ornaments.

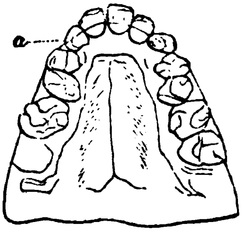
Far be it from us to reproach in the least those who have given such advice, unfortunate as it must have been to the parents of this young lady. On the contrary, we would with pleasure rather render that homage due to their talents, and especially to the many of their individual and beautiful operations; but it is not less our duty to point out a fact which has already been reported by other practitioners—for this improper advice is often the sole resort which may be prepared for the patient in circumstances less grave and serious than those to which we allude.

It was likewise advised to attach to the superior dental arch a plate with artificial teeth, after the natural ones had been eradicated; and it was expected by this means to procure the atrophy of the protrusion of the edges of the alveolar process. The remedy was worse than the evil complained of, and the parents of the lady concluded to put up with the lot which had been assigned to them.

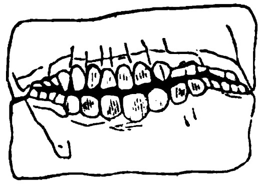
In passing through Paris, some months since, on their route to Naples, they consulted Mr. Brewster, who concluded that it would be most proper and necessary to preserve the teeth in remedying the deformity; and he undertook the task notwithstanding the difficulties which presented themselves, although the smallness of the teeth, and the little hold which offered for the necessary operations and affixtures rendered the chances of success still less. Without entering into technical details, altogether useless here, we will but mention the means employed by Mr. Brewster, which were of the following character.

A gold plate was fitted to the inner circle of the alveolar process upon the palatine vault: this plate supported a sett of spiral springs, which were attached to the disarranged organs, and were intended to exercise upon them by their contraction a gradual drawing of the teeth inwards. These means succeeded beyond his most sanguine hopes; for in a very short time (less than three months) the teeth altered their position, and the edges of the alveolar process retook their proper form and natural direction so much so that the mouth of Miss S. has, we can now say, become regulated, and much more handsome than most young ladies of her age.

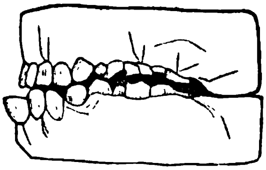
By the following figures, you will be better enabled to judge than words can express to you, the great benefits derived from this method of treatment. The alveolar arch, presents a proper curve, and the teeth of both jaws meet at the ordinary point of junction.



The patient's projection in front has disappeared.



The cavity formed by the elongated separation of the two arches has become filled up.



And in a few days Miss S. will be enabled to eat with facility, and to make herself much more distinctly understood.

Although this wonderful change had taken place in Miss S. as respected the teeth, still the retraction of the lips remained, notwithstanding the recent advantages obtained. M. Blandin, who was consulted by Mr. Brewster, was of the opinion that by an incision made into the myrtiform muscle, and a proper compression adapted, the second infirmity might be remedied. This small but important operation was performed by the Surgeon we have named above, assisted by Dr. Olliffe.

The muscle of the lip was seized by pincers, and the section made by curved scissors. Two eliptical incisions were performed on the mucous membrane of each side of the corner of the lip—this being done, the lip was turned up, and the section of the fibres of the myrtiform muscle given by means of an incision made by gliding along the maxillary bone a short distance. After this operation, the edges of the incision made upon the sides of the curvature, were brought together by means of a suture, and thus the lip was drawn down, the exuberant portion of the mucous membrane destroyed, and this organ enabled to regain its proper form. The whole was kept in its proper position by means of an apparatus made for the purpose by Mr. F. Martin.

No marring accident took place. The tenth day, the threads were withdrawn, the re-union of the parts was complete; but the apparatus was continued on for some time longer.

It is two months since the operation, the lip has regularly shapen itself, and exactly covers the teeth now replaced in their proper situations, and can perform all the functions which it is called upon for siezing and holding aliment, and for the articulation of sounds.

The utterance of speech which before was almost impossible, or at least very troublesome and disagreeable, has been entirely changed as to its nature, and is now performed without difficulty.

This notice is peculiarly fit here, in consideration of the singular method employed in remedying the deformity of the lip, and its successful issue. But that which above all merits attention, is the immense benefit and improvement to the jaw (derived from the skill of Mr. Brewster) judged as incurable by other practitioners of the continent of Europe.

We notice it with so much the more pleasure as there is in this operation a manifest improvement if we compare its simple methods, easily to be applied, and powerful in their action, with ligatures and the extraction of the teeth, so often recommended and performed, as if ever in despair of a remedy sufficiently proper for an evil so afflicting, and unfortunately so common on account of the little care which many parents bestow in watching the second dentition of their children.

Signed, S. P. D. M. P.

A serious impediment in the speech removed by a simple operation upon the teeth.—By E. Maynard, M. D.

In May, 1840, I separated the superior central incisors of Maj. W. of this city, for the removal of incipient caries. A few days afterwards he informed me that the operation had been doubly beneficial, as *it had perfectly removed a very troublesome impediment in his speech which had afflicted him from infancy!* When articulating a word beginning with '*th*' his tongue would adhere to the superior incisors, and the roof of his mouth so firmly as to render it necessary to drop his chin before he could pronounce the required sound. Separating the central incisors opened an *air passage* to the roof of the mouth, above the end of the tongue. This prevented the formation of a vacuum there, and of course relieved the tongue from atmospheric pressure—the apparent cause of the difficulty.

Washington, Feb. 20, 1841.

[From the Medical Repository of 1818, Vol. 4th, New Series.]

OBSERVATIONS

On the Use and Functions of the Salivary, Lachrymal, and other Glands in the Human System—by H. H. HAYDEN, ESQ., *Dental Surgeon, Baltimore.*

Having taken a comparative view of different nations and tribes of mankind, and noticed in a brief manner, the prevalence of good or bad teeth among them, and the probable effect of habits and actions in producing, or promoting decay in the teeth, when considered relatively, as to climate; having, in a more particular manner, pointed out the effects, and its operations in promoting the premature decay of teeth so generally in the United States, viz: by the general prevalence of glandular affections; I shall, in the next place endeavor, not only to prove my position as it respects the glands, but to point out and identify what (at least in my opinion) constitutes the universal cause of decay of human teeth.

In treating of the subject of Infantile Dentition, I have assigned as the cause of most of the evils attendant on that period, or at least during the prevalence of the symptoms, that of morbid or acrid secretions: I have there pointed out the existence of this agent, and its operation on the infant alveolar processes and teeth; also, its prevalence and operations, as an effect of certain diseases, particularly the meazles, small pox, and high inflammatory or malignant fevers, and in such a manner, as not to leave a doubt of its influence or capacity to act upon and destroy bone.

Therefore, I feel no hesitation in saying, that the decay of human teeth is occasioned almost universally by an acrid, or morbid secretion from the mouth and gums.

Before I proceed to describe the manner in which this agent is employed in the destruction of the human teeth, and of its operations in the endless variety of cases in which it occurs, it seems necessary, to establish the fact beyond a doubt, that there is such a thing as morbid or acrid secretions in the mouth; otherwise my views, however plausible, cannot be sustained. In order to which, it becomes necessary likewise, to take a cursory physiological view of the human mouth, and some of the neighboring parts.

The mouth, forming a cavity, very large and capacious in itself, is lined with a membrane or skin of the most delicate texture or fineness throughout the entire cavity, covering every inequality of its internal surface from the pharynx to the edge of the lips. The gums, which invest the edge of the superior, as well as inferior jaw, and which surround all the teeth likewise in both jaws, are very irritable and easily inflamed as well from an internal as an external cause—are covered with the same delicate skin or membrane.

The neighboring parts which I have to notice, are the different glands situated in and about the mouth, and which will be duly attended to in course.

The mouth, therefore, (since it is admitted that into all cavities in the human system* there is a constant secretion) must be considered as subject to healthy or morbid secretions at all times, and that in an eminent degree.

In order that this opinion may not rest entirely upon my assertion for its support, I shall endeavor to procure testimony of the most unquestionable kind; and since it is unnecessary to multiply authorities or quotations, I shall confine myself principally to the opinions of Mr. John Bell, and John Hunter.

In Mr. Bell's System of Anatomy, (Vol. 4, page, 22, written I believe by Charles Bell) he observes that, "We have to recollect that every part of the body secretes, and that every surface is a secreting surface; and that even the surface which is produced by an incision no sooner ceases to bleed, than a secretion begins;" (and I will venture to add, that the progress of healing in the incision, will depend almost entirely on the healthy or morbid state of the fluid secreted, and not on the admissions of, or exposure to, external air."—(See Lubbue & Allen.) This is a circumstance, extensive in itself as it relates to the system, and which, if examined attentively, will afford much interesting and useful speculation.) But to return to the subject again; Mr. Bell, in speaking of the lacteals and lymphatics of the intestinal canal, (vol. 4, page 327,) observes, "We have remarked also, that while *every surface of the body secretes*, it is at the same time an absorbing surface; and finally, that while we chiefly contemplate the intestinal canal as imbibing and receiving the nourishment, we must not forget that it is also a *secreting surface* of the first importance to the economy."

Mr. Bell, in treating of absorption, (in vol. 4, page 299) says, "This interstitial membrane is elastic, and being cellular, to allow of motion, its surface is *bedewed* with *serous exudation*." "This fluid is perpetually passing from the extremities or sides of the lymphatic arteries or capillaries, into the cellular membrane, and upon *all the cavities* of the *body*." Further, "The pores, or vessels from which this fluid *exudes*, are called exhalents; and their action is, no doubt, as completely secretion as that which produces the fluid, which in our wisdom, we call more perfect secretions.†"

In describing the inner coat of the œsophagus. Mr. Bell says, (vol. 4,

* See Shaller, Phisy. p. 18, article 43.

† See also Bell's Anat. vol. 4, p. 28.

page 42,) "It in every respect resembles the *lining membrane of the mouth.* This inner coat has an exhaling surface, like the rest of the body, with *particular glands* to *secrete and pour out the mucous* which lubricates the passage for the food."

Whether Mr. Bell's opinions of the mode or manner in which secretion is performed be most correct, viz: by the exhalents, or that of Dr. Hunter, who supports the opinion "that the fluids of cavities were collected by transudations, and not thrown out by exhalents," is not for me, in the present instance, to determine. It will suffice that I adduce sufficient and satisfactory evidence of the existence of fluid secretions in the mouth, and other cavities, of which, exclusive of Mr. Bell and Hunter's opinions, there is abundant testimony. It remains yet to prove, that fluid secretions are at any time, or under any circumstances, unhealthy, so as to constitute an acrid, or otherwise morbid secretion. Of this, independent of what daily experience teaches us, I think we have sufficient proof in the opinion or writings of the reputable author before mentioned: who says (vol. 4, page 300,) that, "By disease, the fluids in the cavities and cellular membrane is *altered.* In dropsy, for example, the fluid of the abdomen loses the property of coagulating on mere exposure; it comes to resemble more the serum of the blood: this were sufficient proof that the collection is not owing merely to the diminished absorption, but, that there is a *change* of *action* in the *vessels of the peritoneum, pleura, pericardium,* &c." Again, "An inflammation of the vessels will throw out a fluid more coagulable, and which, in a high degree of action, will form a *film* of *coagulable lymph,* or *even pus,* on the surface. But in a state the reverse of inflammation—such for example as the debility following inflammation, a serous effusion will be poured out having little tendency to coagulate."

Having noticed the opinions of Messrs. Bell and Hunter, which I think is alone sufficient to authorize my proceeding to an explanation of the effects of acrid secretion, or its operation in the destruction of the human teeth; yet, as there are some important collateral correspondencies which it is necessary to examine, in order to concentrate the amount of evidence on the point at issue, I must beg the favor of an indulgence in another small, but not unimportant digression.

"If," as Mr. Bell says, "an inflammatory action of the vessels will throw out a fluid more coagulable, and which, in a high degree of action will form a film, or coagulable lymph, or even *pus* on the *surface*" (of the cellular membranes and cavities)—if this acrid or morbid secretion is capable of corroding the coats of the membranes, or lining of cavities; of producing *ulceration,* and *causing* a variety of *aggravated evils* yet to be enumerated; has Nature, in the plenitude of her wisdom, made no provisions against an attack so serious and so subversive of the beauty, order and utility of her noblest works? It will doubtless be answered, that the absorbents are a provision against it. To this I shall not, at present reply; but will first examine the salivary glands of the mouth, particularly as was observed in the preceding page.

In attempting a superficial view of the probable intentions and use of some of the glands in the human system, I shall necessarily be led a little out of the bounds of my province; yet it is not my intention to treat of them as a subject generally; or could I entertain a wish to do it, I have not the vanity to think myself, in the smallest degree, capable of exploring the secret labyrinths of a system which has at different periods engaged the combined talents of the medical world, and which is acknowledged to be at the present time involved in doubt and mystery.*

Well might Mr. Bell style the glandular systems, and doctrines of absorption, the most beautiful and interesting in the whole economy—for the more the mind is engaged in contemplating this mysterious plan, as well as that of almost all of nature's works; the more it sees of the wonderfully existing harmonies, and surprising adaptations, manifested throughout the whole; the more it is inclined to believe that there is not an organized atom in animated nature, that does not beam with intelligence at every pore.

It is asserted by most physiological writers on this subject, that the salivary glands are *necessary* to digestion—that this is the *intention*, *use*, and *operation* of the fluid secretions from them.

A very natural and reasonable conclusion, I admit, as much so as that the water in a marsh attenuates the mud; or that the water of a brook emptying into a river, increases the quantity.

But I beg leave to ask if they really were intended for this purpose; are they really necessary in that operation? If they were *intended* for that purpose, why do they discharge their contents in a direct contrary direction from the orifice of the pharinx: as the maxillary, sublingual, and in fact, the parotid glands? The situation of the salivary ducts, from whence the saliva is discharged into the mouth, seem to indicate that they were not intended, or at least exclusively, to assist in digestion; for, had they discharged their contents more immediately into the œsophagus, it would have, perhaps, obviated that excessive waste of this fluid which prevails in many instances, without any visible effect. If intended to soften down the food in mastication, and to facilitate digestion, might we not as reasonably expect to see the maxillary and sublingual ducts discharging their contents in the neighborhood of the parotid ducts, and like them falling more immediately on the food in mastication; or between the dentes molares and cheek of the inferior jaw, to be acted on by either or both, the masseter and buccinator muscles?

In reply to this, it may be said that if they were situated on the out side of the jaws, they would be much more liable to obliteration from cuts or wounds, as is sometimes the case with the parotid ducts. This will be admitted; but it would be not only rare, but truly unfortunate, if they should be obliterated on both sides.

A much more probable reason presents itself in opposition to such an arrangement. It would not have answered so well the views and intentions of the great Author of our frail system, as the present distribution of those important organs.

Secondly, are the salivary glands essential to the digestion of our food? for, if for that purpose, it follows that they are necessarily so, therefore cannot be dispensed with without producing some material derangement in the economy of the system; for it will seldom be found that nature, in the execution of her plans, employs anything unnecessarily, although at first it may appear so.

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* See Bell and Hallen, page 25, vol. 4, page 10, 298—'9.

I shall in the first place take some notice of the probable quantity of fluid that is secreted from the salivary glands, together with the quantity discharged from the *pancreas*.

It is said by *Helvetius* that a soldier of the guards received a cut of a sabre across the cheek which laid open the parotid duct: the wound healing on the inside of the cheek, occasioned a constant discharge outwardly from the parotid duct. At the time of his repasts there flowed from the orifice an abundance of saliva; insomuch that during dinner, which is short in the Hotel Dieu, it moistened several napkins.

Sabatier mentions that a soldier moistened three napkins during a short repast, by the saliva which escaped from one of the salivary ducts of Stenorr, which remained open from the effects of a wound.

Gavard mentions having seen at the Hotel Dieu, a man affected with a similar complaint, and who lost at a meal in the space of ten minutes, at least two ounces of saliva.

It is also said that the salivary glands have been known to discharge twelve ounces in an hour. See Haller's Phy. p. 293.

It is likewise said that half an ounce an hour is constantly discharged and swallowed.*

Therefore, it appears agreeable to the case mentioned by Gavard, that if two ounces of saliva are discharged in ten minutes (and which is confirmed by Haller) the quantity discharged in twenty-four hours would amount to two hundred and eighty-eight ounces.

But, it will be considered, that their quantity was discharged at the time of a repast, and therefore at a time when the glands were subject to the greatest action of the muscles which promote the discharge of the saliva—consequently not a proper time by which to ascertain the probable aggregate quantity discharged in twenty-four hours.

If we admit the twelfth part of the above quantity to be secreted (including the hours of repast, at which time much the greatest quantity is discharged) and extend it to sixteen hours only, for very little is discharged from them during sleep, the quantity will amount to sixteen ounces.

If we next consider the pancreas, which is three times as large as all the salivary glands of the mouth,† and admit a proportionable quantity of fluid secreted, it will amount to forty-eight ounces in sixteen hours, and probably much more, if we were to form a conclusion on the comparative size of the Ductus Virsungi, and the salivary ducts.

This quantity added to the salivary discharges, amounts to sixty-four ounces in sixteen hours; exclusively of the glandular secretions of the mouth, œsophagus and stomach. A quantity that far exceeds, at least in most instances, the amount of food received in twenty-four hours, without taking into view the quantity of drinks of different kinds that are received into the stomach during that time.

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* See Haller's Phy. p. 318. † Ibid. p. 335.

If we next consider the nature of the food which constitutes our daily subsistence, as to its being fluid or solid, we should be able to form a more correct opinion of the probable quantity of juices required to digest it. If the salivary juices are *necessary* to promote digestion, how is it that those who are in the constant habit of chewing tobacco, opium, &c. from the time they arise in the morning, until they go to rest at night, (hours of repast excepted) and who scarce swallow a drop of the saliva; yet are strong, robust, and uncommonly healthy, and in general more exempt from disease than those on the contrary who do not indulge those habits, (at least those who chew tobacco.) There are exceptions to this rule in some instances I admit, where, as is supposed, it has probably induced a dyspepsy, and even phthisis.

But I am inclined to believe, that much of the result in many of those instances may be ascribed, with truth, to the effect that it has on the mind. For in many cases of this kind that occur, they are persons who have recently commenced the habit of chewing tobacco; or if not so, they are not only in the habit of spitting constantly, but under perpetual apprehensions of swallowing a drop for fear of creating nausea. This produces a dryness in the fauces, and an almost constant but involuntary effort to swallow without allaying, in any degree, the increasing propensity. At length it becomes a source of vexation; a constant but almost insensible teazing of the mind, until, without reflecting on the cause, a wasting of the substance is manifest, although, at the same time the due secretions and evacuations of the system are regularly performed.

I think I may venture to assert, that a sharp-pointed feather permanently fixed in a person's clothes in such a manner as to goad him constantly in some tender, or irritable part, would produce not only a wasting of flesh, but a real dispepsy, and perhaps something worse.

Diseases are often produced in this manner merely from the sharp-pointed remains of a decayed tooth, at which the tongue is incessantly at work, and which at length deprives the patient of every comfort; and fever is induced, and often symptoms not only unfavourable, but extremely obstinate.

It is the constant but slow teazing the mind that will often, from various circumstances, produce surprizing effects in the constitution.

It was thus that the lion was wrought up to a phrenzy, not by the pains occasioned by the goadings of a simple gnat, fixed in his nostril; but by the incessant teazing his *royal intellect.*

If the salivary juices are necessary to promote the digestion of the grosser kinds of food in use among us, can it be considered as necessary for the Arabs, and many of the tribes of Africans, * as well as many of the Turks, Egyptians, Hindoos, &c., who live almost constantly on boiled rice, dates, and milk? If so necessary in performing those important functions, how do not only those who chew tobacco, opium, &c., dispense with the saliva; but those who from falls, blows, cuts, &c., have unfortunately had their under teeth knocked out, and lip so lacerated that the saliva is constantly running from their mouth, without the power of restraining it; and also those who are sometimes long subject to fistulous holes under the chin that extend into the mouth; and through which the saliva is incessantly discharging except during sleep?

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* See Park's Travels.

Lastly, there is a period in infancy, at least for several weeks, when there is no visible discharge of saliva in the mouth of the infant, for there is little or none running from the mouth; and they are seldom seen or known to swallow, except when at the breast, or fed. Nor do they for many months, except at the times abovementioned, acquire the faculty of swallowing with facility; not even until they have several teeth; during which time they begin to partake, more or less, of grosser food than milk; it is then we see the saliva constantly running from their mouths, without ever making an effort to swallow it, or even restrain it except laid on their backs, at which time it collects on the pallate and obliges them to swallow. If it is so necessary, how can they for the first eighteen or twenty months dispense with so much; and yet thrive so fast and enjoy such a measure of health? I admit, that it is wisely and *necessarily* provided by the bounteous gift of nature; that it is indispensible; that without it we should become loathesome to ourselves and all those around us; yet I must be indulged in the belief that it was intended also for other purposes equally important, and such as are explained hereafter.

The human mouth being considered as subject at all times, under various circumstances, not only to healthy but to morbid secretions, which, under certain degrees of action are liable to form a sizey, acrid, and sometimes incrassated mass, or collection of fluid in this cavity; and which is often rendered more so by the free access of atmospheric air. It seems evident that in this state it is unfit to be received into the stomach, or be re-absorbed.

Hence we see this wise provision, this copious flow of saliva into the mouth, doubtless with the intention to correct the acrimony, by diluting the unhealthy secretions, and thereby preventing its injurious effects in the mouth, rendering it easy and safe if carried into the stomach, and easy of being absorbed.

That they were intended, at least in part, for this purpose admits not a doubt in my mind; that they are necessary for that purpose, must appear evident from an almost infinite variety of circumstances.

In a state of perfect health, and during the hours of sleep, when there is scarcely any discharge of the salivary juices; the natural secretions of the mouth are sufficient to lubricate it, and render it free from any degree of fœtor, or inconvenience when we awake.

But on the contrary, when any derangement of the economy exists from an impurity of the blood, or a vitiated state of the fluids, we are sensible of the most unpleasant effects in the mouth when we awake from sleep.

But as soon as the action of the muscles on the salivary glands promotes the discharge of their juices, this inconvenience, even without eating or drinking, is in a short time removed, and the mouth is rendered comfortable.

If a fever prevails, during which the salivary discharges are almost entirely suspended, this inconvenience, in proportion to the acuteness of the fever, will be increased also, until the patient's situation is rendered extremely uncomfortable from the filthy accumulation of matter in the mouth, that is often so acrid as to produce a soreness throughout the whole cavity, and even the skin on the tongue cracks open in different places and bleeds.

If attenton is paid to the period of infantile dentition, we see the importance of the salivary juices displayed (in this view) in a striking manner.

If the irritation is increased so far as to excite a moderate ptyalism, we see the salvia flowing in abundance from the mouth of the little sufferer; but if fever ensues, the salivary secretions are at once suspended almost, and the tongue becomes furred over, and often, before it terminates, a general appearance of aptha is manifested in the mouth. (I would not be understood in the present instance as meaning that the aptha and sometimes ulceration is produced in consequence of morbid secretions.) As soon as the fever subsides, and the salivary glands resume their functions, the incrassated secretions, and unnatural appearance of the tongue is removed, and a more healthy action is re-established in the mouth.

Many authors in writing on the different diseases, incident to mankind, and their symptoms, have noticed also, the appearance of the tongue. But I know of no one that has marked its appearance, in disease and health, more particularly than Mr. Abernethy in his "observations on the disorders of health;" in which are mentioned, a number of cases that would afford, I think, much real support to the opinions I have advanced on the use of the salivary glands, could I feel myself fully at liberty to comment upon, or question the opinions of so reputable an author.

Such, however, is the effect of some of the diseases to which we are subject, in promoting acrid secretions in the mouth, and other parts of the system, that the necessity of such a provision as the salivary glands must be acknowledged as indispensably necessary, or, however well we might support ourselves under the operations of the disease, the effects would probably be such as to render us odious in the sight of each other, while we lived to linger through a miserable existence.

Such for instance, would be the effects of a severe attack of the meazles.

I may be thought perhaps, to have given much too great a latitude in the opinion, particularly as it relates to the disease above mentioned.

But such are the effects of this disease in the mouth, which I have often witnessed, that, were it not for the copious discharge of saliva, I should not be surprized to see the mouth eaten into holes, as well as the stomach, and the whole of the intestinal canal. Therefore, since in this point of view, there is such a striking analogy between the eye and the mouth, particularly as to the effects of the above disease, I shall make a few remarks upon it.

It is generally supposed that the secretions from the glandula lachrymalis were intended to wash away chips, sticks, or moates that accidentally fall in upon the eye; to lubricate it, and also to supply us with tears when we are disposed to weep or cry.

If this were true, we might expect to see millers, ash-men, chimney sweepers, and others who work in the dust, with their eyes always full, or running with tears, which is not the case. But as soon as the acrid effects of smoke are felt upon the eye, we see the saliva (for it differs none in quality) or tears poured forth, to prevent its inflaming, or otherwise injuring the coats of the eye. Thus it is on removing the skin from an onion. In proportion to the quantity or strength of the acrid effluvia received from the onion into the eye, so likewise will be the discharge of the tears, until the fluid is sometimes seen almost to stream from the eye. Such also is the effect of vegetable alkali, insomuch that every reflecting mind will admit, that were it not for this beautiful provision of nature, and which is necessarily so, inflammation would ensue, and in all probability terminate in total blindness.

Notwithstanding the numerous glands which nature has supplied for the purpose of lubricating the eye, the mouth, the œsophagus, and in fact, almost every part of the system; yet they are alike, secreting surfaces; therefore, subject during the prevalence of diseased action in the system to the effects of acrid or morbid secretions as well as healthy.

Thus we see, in common inflammation of the eye, during the night, or the hours of sleep, when, like the salivary glands, there is little or no discharge from the lachrymal gland, the eye-lids in the morning are so completely agglutinated that it is not without difficulty that it can be opened; and when it is, the coats of the eye are so susceptible that even the light is painful to them. But as soon as the due secretions from the glands take place, the irritation is in some degree allayed, and the pain relieved.

It would be easy to point out in numerous instances, the serious evils and unhappy consequences that would inevitably result to the eye, as well as mouth, from a total deficiency of this important fluid if it were necessary. But the effect of some of the diseases to which we are subject, on the eyes, as well as mouth, affords such conclusive testimony in favor of the opinion I have advanced that it would seem needless to pursue it any farther. Such as those of the inflammatory kind, catarrhal affections, small pox, and particularly the meazles, on which it is needless to comment, since it must be admitted, by all who reflect on the nature of a severe attack of that complaint, that were it not for these organs, we should present ourselves an awful spectacle to every beholder.

This opinion will, I think, be more strongly verified in the course of the following observations, which relate, not only to the important use of the lachrymal juices, correcting the acrid secretions of the eye; but also to the like important use of the salivary juices in often correcting the highly septic state of the mouth, from morbid secretions.

It is not my intention, in the present instance, to enter into a pathological disquisition of the disease called the scurvy, as it relates either to the mouth, or system generally. Suffice it to say, that the cases of scurvy in the mouth mostly complained of, are almost entirely local, and proceed from an accumulation of tartar about the teeth, irritating the gums, and rendering them often much diseased; and from causes producing acrid secretions which lodge about the teeth, irritating the investing membranes, &c.

The result of these are diseased, flabby gums, surcharged with black, impure blood, swollen and bleeding at the slightest touch—discharging at times a thin, acrid fluid, which, with the other secretions of the mouth, are carried into the stomach, corroding and irritating, (in some instances) the entire passage of the alimentary canal.

The number of persons is composed of a very large proportion of society, at least in this country, and it is said by a late writer[*] that at least three fifths of the inhabitants of large Cities in France, are subject to this complaint.

I shall, in the course of this subject, take some farther notice of the frequency of this affection of the mouth, and of the cause of its prevalence.

But since there is a striking similarity in this and the more inveterate scurvy prevailing at sea, and on long voyages, as it respects acrid secretions in the mouth, I shall take more particular notice of the latter in order to prove, or at least point out the use and necessity and importance of the salivary juices in correcting acrid secretions.

Whatever may constitute the cause of this dreadful disease, it is enough for the present purpose to know that some of its symptoms are a melancholy dejection of spirit; a lassitude; a stiffness in the joints, and great difficulty in breathing; the gums soon after begin to swell, itch, and bleed, having an unusual, livid redness—all of which symptoms indicate, together with yellowish complexion, and gradually growing darker; a highly morbid or depraved state of the fluids. An universal dryness of the skin is a certain indication of a feverish habit (which prevails excepting the last stage of the disease) during which the functions of the salivary glands are almost totally suspended; hence the distressing dryness of the mouth and throat.

In this state the acrid secretions of the mouth are left to commit their ravages, by lodging round or about the teeth under the gums; the investing membrane of the teeth is then irritated, inflamed, the teeth become loose and drop out; the gums become ulcerated and phagedenic, while the whole system is verging fast to dissolution.

Can acrid secretion be denied here? or the want of healthy salivary secretions, or some wholesome substitutes to correct the acrimony and attenuate the incrassated mucous in the mouth? At least I think not!

In the next place, as a further illustration of the use and intention of the salivary juices in correcting the acrid secretions of the mouth, I would call the attention to that state in which persons die by starvation, or famine.

Here we see displayed the effects of the one, through a deficiency of the other; and the *tragic finale* ending in *death* the most lingering, and most to be dreaded.

In this unhappy state, when the support of nature is cut off or withheld, and the blood, from a deficiency of nourishment[†] tending to an alkaline disposition, and at length approaching a putrid acrimony; [‡] this acrid secretion manifests itself not only in the mouth, but in the thoracic and abdominal viscera by the most violent pains (at least in the former) which terminate sometimes in actual madness.

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[*] See Laforgue on the diseases of the mouth.

[†] See Haller's Physiology, p. 314, or article 439.

[‡] See Bell's Anatomy, vol. 4, p. 64.

In this situation the breath becomes fœtid, and the secretions of the mouth excoriate the gums and cheeks, irritating the investing membrane of the teeth, until they become loose and drop out; while the seasonable aid of the salivary juices is cut off by a dreadful fever, which suspends, as in almost all cases, the operations of the salivary glands, which otherwise would have corrected the acrimony, and lessened in some degree the miseries that are on such an occasion, seated in the mouth.

Lastly, it is said that the inhabitants of Biledulgerid (a province in the north of Africa) are subject, at certain seasons of the year, to an inveterate scurvy in their gums which is attributed to their eating of dates,which is almost the only vegetable they have that is eatable, and which grows in abundance in that country.

I would ask, why are not the inhabitants of the other different provinces in Africa, or of Barbara, afflicted with this complaint, who live mostly on dates; and also the Arabians and the lower order of the Egyptians and Turks? It is also said of those people that they are very subject to inflammations in the eyes, which is attributed to the reflection of the sunbeams from the white hard soil.

I would likewise ask, why are not the inhabitants on the borders of Zaara and the great desert of Arabia, or those who are in the habit of travelling in those regions. afflicted with those complaints? If so in some instances, I should ascribe it to another cause.

Why are not the inhabitants of the cold regions of the North, afflicted with this disease of the eyes, who are subject not to beholding white sand, but a boundless region of snow, which operates more severely by straining the eye than the whitest sand at present known?

Mention is also made by numbers, and particularly by M. Volney in his travels in Egypt and Syria, of the prevalence of diseases of the eyes, and of blindness among the Egyptians, and which is frequent among the Syrians, and which he attributes to the "corrupted humours" which are afforded by the peculiar nourishment which they take, and to the saline quality of the air, which he considers as constituting the "first principles of those disorders." These humours being "diverted from the ordinary channels by habitual perspiration, they fly to the exterior parts, and fix themselves where they find the least resistance." They therefore naturally attack the head, because the "Egyptians, by shaving it once a week, and covering it with a prodigiously hot head-dress, principally attract to that the perspiration."

It appears to me that Mr. Volney need not have gone so far in search of the cause of this complaint; or if he considered onions which he mentions as conducing to this complaint, and of which those nations consume great quantities, he would have been careful from notions of humanity, to caution his countrymen to abstain from the use of garlic, which is equally calculated to produce opthalmies.

It is a well known fact that all persons who perspire very freely, complain of a soreness and smarting under the eyes, which is in general attributed to the heat of the sun, or weather, and "the sweat running into the eyes." It is also a well known fact, that in a profuse or constant perspiration the salivary secretions are much diminished, and sometimes, almost or quite suspended, the mouth and throat parched up for want of something to moisten it. It may be observed too, that when the salivary secretions are diminished, the lachrymal excretions are likewise; that, although the thirst of the mouth and throat may be allayed by drink, the eye cannot drink except indirectly.

Hence, the constant secretion of the coats of the eye, receiving some change or modification by the access of external air, are left to irritate the coats of the eye and thereby produce that unpleasant burning sensation experienced by those who perspire freely, merely from a deficiency of the lachrymal secretion to correct its operation.

This seems to be strengthened by the relief experienced by those who in this situation wash their eyes in cold or fresh water.

It is observed by the same author, that this disease prevails more on the sea coast than elsewhere; without doubt, the water which they drink or use, possesses a saline quality.

To these circumstances may be attributed (I think) most of the inconveniencies which they suffer from this complaint.

In the first place, the saline quality of the water naturally promotes thirst, of course a diminution of salivary secretions; the same is experienced in the air, although we may not be so sensible of it.

In the next place, this monstrous head dress, promoting and keeping up a constant perspiration in the head, tends to diminish the salivary and lachrymal secretions, till at length, the secretions of the eye and surrounding surfaces becoming more and more acrid, inflammation ensues, which terminates in a distressing opthalmia, or total blindness. This opinion receives additional support from further observations of the same author, viz: That while the natives are subject to this disease, strangers are almost exempt—for a very good reason—strangers are not in the habit of wearing the enormous turban.

"It will appear more probable, that the excessive perspiration of the head, is a principal cause, (thereby attracting the humours to the eyes, as in his opinion,) when we reflect that the ancient Egyptians who went bare headed, are not mentioned by physicians as being much afflicted with opthalmies."

But to return to the inhabitants of Bilidulgerid, it will be recollected that this large extent of country is barren and mountainous: That during several months at least, the air is intensely heated; so much so, that for six months in the year, almost every fountain or source of water is exhausted or dryed up.*

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* It is worthy of observation that, although in the different provinces of Barbary the plague rages with dreadful fury, yet the inhabitants of Bilidulgerid are exempt from it, so that it is not even known among them, although a constant intercourse is kept up with the neighboring provinces. Thus an abundance of water has its bad effects as well as a deficiency, which no doubt, contributes largely in producing this disease, by promoting an habitual perspiration, particularly about the head.

Therefore, it is from the want of water that they are reduced to this unhappy situation, and not from eating dates, or looking at white sand.

It is, doubtless, from a continued privation of this refreshing liquid to quench their parched throats, that the resources of nature in the system are likewise exhausted; and as in famine, the acrid secretions begin their operations on the eyes as well as mouth; producing inflammation in the one, and corroding the internal surface of the other, irritating the membranes of the teeth; they at length become loose and all drop out. This seems but the commencement of the dreadful scene; for in proportion as the dissolution of the fluids progresses, the secretions become more acrid, and being swallowed and carried into the stomach, without the diluting aid of the saliva to correct, or lessen its acrimony, thereby disordering its functions and increasing the evils' by producing general disease, which terminates in the most distressing symptoms of certain dissolution of both fluids and solids; commencing at the mouth and eyes and spreading over the body, rendering the patient loathsome to himself and all who are around him.

Here, if I am correct, we see at once displayed in a striking manner, the use and importance of the salivary juices in diluting and correcting the acrid secretions of the mouth, and also of the eyes.

Here, too, we see presented (when viewed in this light) a fabric whose internal structure discloses a system in the glandular and absorbent economy, comprizing such symmetry, such endless correspondencies and beauty, as beggars the sublime genius, and boasted talents of man to imitate, in all his various modifications, and shows it worthy of only Him from whose hands it came, and whose works are not only inimitable, but inscrutable.

Having pointed out what I consider one of the most important uses of the salivary and lachrymal glands, and their secretions; having noticed the correspondence between the absorbents and those glands, I beg leave at least to skim over the surface of this exhaustless fountain, which affords such pleasing speculation, in order to trace the correspondencies into the general system; for they are not confined to the mouth and eyes.

If the fluid secretions in different parts of the human body are susceptible of being changed into coagulum, or even pus, on the surface of the different cavities and membranes; if at any time they are morbid, become acrid, capable of irritating and inflaming the parts, so as to render the salivary or any other juices necessary to correct the acrimony, or dilute or dissolve the coagulum so as to render it *easy* of *absorption*, in any one instance; it certainly must be necessary throughout the whole system.

That this is a rational conclusion, I think will be made to appear from a variety of corresponding circumstances, not only interesting in themselves, but worthy of the most deliberate investigation.

That the thoracic and abdominal viscera are subject to morbid excitement, particularly the latter, from acrid secretions, I am inclined to believe, from a variety of circumstances, not, however, grounded on *my own experience.*

Mr. Bell says, (vol. 4. p. 29)—"I have seen in the high state of inflammation of the membrane (the peritoneum) pus formed upon the surface without ulceration, and therefore, probably from the same exhaling surface; and coagulable lymph lying in flakes upon it. (Note.) The increase of the serous discharge forms the common ascites; but whenever the *natural secretion*, or *exudation* from the peritoneum *is altered*, *adhesions* are *apt* to *form*."

Does inflammation produce this morbid secretion and adhesion? or does an acrid secretion (or natural secretion *altered*) produce an inflammation in the coats of the peritoneum, the result of which is an adhesion? Does the fluid injected, in the operation for hydrocle, produce an inflammation and consequent adhesion or union of the tunica vaginalis, and tunica albuginica? or is there a pre-existing inflammation which only requires the healing qualities of a little wine to heal it over, thereby producing a union of those membranes? I confess I feel a corresponding conviction relative to both; but shall suspend my opinion.

If there is an increase of the halitus or aqua pericardica in disease,*—if it "concretes into villi, and cellular substance"—or is, at times, "somewhat viscid,"† and "immensely increased," is it probable that the secretions at any time become acrid, and capable of exciting inflammation and adhesion of the pericardium and the heart? To this I do not feel competent to answer. But, admitting those secretions in the abdominal cavity; are there no provisions made to correct their quality, or counteract their effects in a certain degree, and under particular circumstances? Mr. Haller makes mention of "a peculiar kind of glands, called conglobate,"‡ which are of an oval form, or shape following the course of the blood-vessels throughout almost every part of the system—of which he observes—"Of what service these glands are to the lymphatics, is not yet well known."

Are those the glands that perform the office of pouring out a thin fluid like the salivary juices, for the purpose of diluting and attenuating the viscid secretions in the different cavities of the system, rendering them easy of absorption; and also, for correcting its acrimony? That these are organs alloted to this purpose, must appear evident on mature reflection: that they are destined of *necessity*, must appear equally obvious: that they are even admitted, though in an indirect manner, by different authors, is equally as certain.

Mr. Haller's writings seem to carry this idea in several instances, though he has not declared it in any one that I am apprized of; as (in his Physy. p. 25, article 56,) for instance; after observing that the use of those glands were not known, he remarks that, "It is, however, rendered probable by late experiments, that in these glands *some kind* of *fluid* is *prepared* which is *mixed* with the *lymph*.

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* See Bell, Anatomy, vol. 2, p. 52 and 54.

† See Haller's Phy. p. 35.

‡ See Haller's Phy. p. 24 and 25.

His opinion of the use of the blood of the spleen, in diluting the sluggish blood of the liver, (whether correct or not[*]) seems to imply that the fluids, at times, require the operation of some agent to facilitate their circulation, and prevent obstructions.

Mr. Bell likewise gives us much reason to conclude, that such a provision is made (if I comprehend him) in the system; and that this is their use we are left to infer from his own words, in vol. 4th, p. 57, when speaking of the third cellular coat of the stomach, he says, "It is in this coat that anatomists have found small dlundular bodies lodged, *especially* towards the extremities or orifices of the stomach."

Again, at page 58, when describing the internal coat of the stomach, which he says "has not been so fully examined, and is not so *perfectly understood* as the analogous appearance of the intestines," he observes that, "*Glands* are also described as opening upon the inner surface of the stomach; and those who have not been able to see these glands, which are seated in the third cellular coat, yet believe in their existence from analogy; while others observe foramina toward the *upper* and *lower* orifice of the stomach, which they *suppose* to be the openings of ducts or glands." "These, however, which I believe to be merely folicles, are themselves the secreting surface, and not the ducts of the proper round glandular-bodies; *at the same time* it must be admitted, that in disease, as if magnifying and giving size to the structure of the stomach, they shew a *glandular* and *tuberculated structure*." (This is certainly not "a poverty of imagination," but "a genius at twistical reasoning scarce to be met with.")

From the following, I think we may reasonably infer what is the use of those glands, since their existence seems to be admitted.

"It is almost superfluous to observe, that the gastric juice has no power of acting on the coats of the stomach during life; whether this be owing to the property in the living fibre, or resistance to the action of the fluid, or *that there* is a *secretion bedewing* the *surface* which *prevents* the action—it is not easy to say."[†] If for a moment we admit that those organs at the two orifices of the stomach, operate as salivary glands, pouring out a thin aqueous fluid, to correct or attenuate the secretions of the stomach; can it be owing to a suspension of their functions or discharges, that the natural secretions of the stomach become acrid, and causing those distressing pains experienced in a state of starvation, or famine, and a variety of other cases?

From all of the above circumstances, and many more that might have been adduced, I think it must be uniformly admitted, that there is, not only a necessary, but really an established system of (salivary) glands throughout the whole system, and for the necessary and express purpose of diluting viscid secretions, and correcting their acrimony; thereby preventing inflammation in all the different cavities and cells in the human body.

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[*] Haller's Phy. p. 339.

[†] See Bell's Anat. vol. 4, p. 61.

This opinion not only receives additional support; but is at the same time, beautifully illustrated in a circumstance that follows.

I have observed that it is during the action of the muscles particularly, that the salivary discharges are promoted; and that during a state of rest, there is but little or no discharge from those glands, either in the mouth or eyes—hence such an unpleasant taste in the mouth in the morning; hence also the eyes are often glued up during the night.

It is frequently by contemplating the works and operations of nature, that the most important and latent truths are discovered and brought to light, which would otherwise have remained in obscurity. It is also certain that in many instances analogy is a much surer guide to truth, than the most refined systems in nature.

Hence I am inclined to resort to the following circumstance as a strong collateral testimony, in support of the opinion or subject under consideration.

Whoever is disposed to remark, will find that there is not a human being, or a four-footed animal, (and also many other species of living creatures) existing in a state of health, but what is in the habit of extending its limbs and body, or stretching as it is called, after having remained any length of time at rest, and particularly so after indulging any length of time in sleep. This is common, and may be observed in every animal from the sucking mouse to the sagacious elephant, and also in every human being. It is often observed that this is an indication of thriving; and that it is also necessary in order to stretch the muscles that have become *relaxed*, by a suspension of action.

The one I admit is correct; but I should consider it more properly an indication of health; for where there is a healthy excitement, there is always, I believe, an increased secretion; consequently stimulating to this peculiar action in the man or animal.

But is it probable that it is necessary to stretch the muscular fibre that is already relaxed, from a state of inaction? Or can it be probable, that it is necessary to throw the muscular fibre into a state of tension, to qualify it for an immediate state of inaction again, by lying down at his ease immediately, as is the case with man? Or for animals to stand for hours in one position without moving?

Is it not singular that to a man, or animal that has laboured through a sultry day, in which a copious perspiration has been constantly kept up, his muscles and limbs fatigued and relaxed, should feel no disposition to stretch himself, or extend his limbs in the morning when awake? On the contrary, feels himself as much fatigued almost as when he lay down, though in perfect health? If it is necessary to stretch the limbs, or throw the muscles into a state of tension in order to re-establish their tone, after a few hours of relaxation, is it not equally singular, that little or no disposition to stretch is manifested in a sick animal that has remained in that state for days?—Or a man who has laboured under a violent fever, for the same length of time?

If it is to answer that purpose only, is it not singular, indeed, that man who enjoys an uninterrupted repose through the night, and indulges himself in stretching in the morning when he awakes, should feel an increasing but involuntary propensity to stretch, the more he lounges in idleness through the day, which is invariably the case when in health ?

Rather let it be considered as an inherent principle, endowed by nature, as not only necessary but indispensible to health, both in men and animals, and to preserve us from disease.

It is in a state of rest that the functions of all those that are denominated salivary glands are suspended; while at the same time the exhalents are performing the act of secretion by the action, or power of the vital force. Hence the necessity, when we awake from sleep, of this general spasmodic or muscular action, by which the glandular system is compressed, and the contents discharged to dilute and correct the secretions; thereby preventing morbid excitement which might otherwise ensue by being too long retained in a viscid or otherwise acrimonious state.

TO SUBSCRIBERS.

We have now fulfilled the promise made at the commencement of our labors as editors and publishers of the American Journal of Dental Science, having completed twelve full numbers according to the pledge given on issuing the first number; and if subscribers will now fulfil their part, and send in the amount of their dues, these, together with the donations already received from a few liberal and high minded men, will afford ample means to defray all expenses; otherwise, there will be a deficiency resting upon our hands, which we hope those who did subscribe and send in their names to aid us in this enterprise, will have too much honor to suffer us to lose—and too much pride to allow their names to go before the world, as having received the journal, and defrauded its projectors of the small amount due for their subscription.

For the labor bestowed in the accomplishment of our design to establish the journal, we, at the beginning, looked for no pecuniary emolument, nor do we ask it now, having received a higher reward than wealth can bestow, in the commendations we have so often received for our efforts to improve the condition of our science, from the ablest and most distinguished authorities; as well from gentlemen of the Medical, as of our own profession; and also from the best medical journals in Europe and in this country.

The first Dental Surgeons of Europe, among whom we are proud to mention the names of Cartwright, Koecker, and Brewster, have, in letters written in the kindest and most friendly manner, expressed their high satisfaction at the efforts we are making to advance, not only in this country, but also in Europe, the interests of the dental art; and no inconsiderable portion of our subscribers are of the most distinguished dentists of the various cities of Great Britain.

From the dentists of our own country, we feel happy in saying, that we have received many proofs of kindness and good will, and much to encourage the effort we made in the midst of doubt, surrounded as we were by so many disheartening circumstances. Much may have been said against us that has never come to our knowledge; but we have heard of but two individuals in the United States, having pretensions to a reputable standing in the profession, who have spoken lightly or sneeringly of our efforts to raise the standard of professional excellence; and we would, in all friendship and good will say to them, that it is our earnest desire that they may yet feel the importance of the subject, and unite their talents, and do more for the profession than we have been able to do; and that their labors *in* the profession will distinguish them for something more than the amount of fees they receive for their services; and also, that their labors *for* the profession will be beyond what relates to their own individual interest and benefit.

The Journal will in future be conducted under the immediate direction of the American Society of Dental Surgeons: the permanency of which society, we now consider established beyond all doubt. The late convention in Philadelphia, extracts from the proceedings of which will be published in the first quarterly number in September next, gave decided proofs of its permanent character.

OUR SECOND VOLUME.

It is with sincere pleasure that we announce to our subscribers, that the future destinies of this journal have been entrusted to the fostering care of the American Society of Dental Surgeons. That body has assumed the entire management and control of the work, after the completion of the first volume, on condition that the intentions and engagements of the original publishers shall be fulfilled.

The society has so far modified the name, as to denominate the work hereafter, "The American Journal and Library of Dental Science." It will be issued quarterly, as the former publishers had intended, and the subscription price will be raised, agreeably to their plan, to five dollars per annum.

The propriety of the change of name, results from the fact that one equal half of the work is to be devoted, as heretofore, to the republication of standard works on dental theory and practice; and the necessity of advancing the price to five dollars, arises from the circumstance that no *special subscriptions* are solicited, as heretofore; but the work is made to depend on the funds of the society, aided by ordinary subscription. Three dollars per volume will not defray the expense of a work of this magnitude, having so small a subscription list as the dental profession will be likely to supply.

In order to give value to each copy, only 400 copies will be issued, and the average number of pages of each quarterly number of the journal, will be at least 142; or 568 pages per annum; equal to the 12 numbers of the first volume.

As the society has assumed the entire control of the journal, that body has appointed two editors, C. H. Harris, M. D. of Baltimore, and Solyman Brown, M. D. of New-York, for the year ensuing.

Associated with the editors, are the following twenty collaborators, whose duty it is to procure and furnish matter for the pages of the work, and to aid its circulation—each being *ex officio agents* for receiving subscription and transmitting the moneys to the treasury:

H. H. Hayden, M. D.—*Baltimore.*
Eleazar Parmly, M. D.—*N. York.*
E. Maynard, M. D.— *Washington City.*
E. Townsend,—*Philadelphia.*
Ludolph Parmly, D.D.S.—*Mobile.*
Vernor Cuyler, M. D.—*Hart. Con.*
Lewis Roper, M. D.—*Philadelphia.*
E. Baker, M. D.—*New-York.*
E. Noyes,—*Baltimore.*
Alex. Nelson, M. D.—*Albany.*
Doctor Rogers,—*Cincinnati.*
Horatio N. Fenn, M. D.—*Rochester.*
B. A. Rodrigues, M.D.—*Charleston.*
Hudson S. Burr, M. D.—*Philadel.*
Edward Taylor,—*Natches.*
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C. S. Brewster,—*Paris, Fr.*
I. I. Greenwood,—*New-York.*
H. M. Hayden,—*Baltimore.*
G. G. Brewster,—*Portsmouth, N. H.*

Inasmuch as the editors have already received many kind proffers of assistance in the department of agencies for the journal, they take the liberty of making the following appointments, and of saying to the profession at large, that the Journal will be regularly forwarded as directed, to all subscribers who shall have remitted the amount of subscription to either of the following agents:

S. Highley, *Bookseller, London.*
E. Gidney, *Dentist, Manchester,*
J. N. Frink,—*Portland, Me.*
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O. P. Laird, M. D.—*Columbus, Ga.*
W. R. Scott,—*Raleigh, N. C.*
F. B. Chewning, —*Richmond, Va.*

All agents are respectfully notified that the Editors make themselves responsible if they supply any subscriber before the amount of his subscription has arrived at the Treasury of the Society, kept by E. Baker, M. D. No. 6 Warren street, New-York.

POPULAR ESSAYS,

ON IMPORTANT SUBJECTS IN DENTAL SCIENCE.

The profession are respectfully informed that five of the thirteen Essays, ordered by the American Society of Dental Surgeons, are now ready for distribution, at one dollar and fifty cents per hundred.

These Essays are stereotyped as fast as the writers prepare them; and thus every number can be published from time to time, as the orders from various parts of the country may demand.

Orders containing cash remittances should be forwarced to the Recording Secretary of the Society, Solyman Brown, M. D., No. 13 Park Place, New-York, who will transmit the Essays by such conveyance as shall be prescribed. The postage is too much to allow of their being conveyed by mail. As they are not periodicals, letter-postage will be demanded. Private conveyance must therefore be employed. The five Essays now ready, are the following:—

On the Utility of Artificial Teeth—by Chapin A. Harris, M. D., Baltimore.

On the Tooth Ache and its Cure—by Vernor Cuyler, M. D., Hartford.

On the Ulceration of the Fangs of the Teeth, and the Best Methods of Cure—by Elisha Baker, M. D., New-York.

On the Preservation of the First Set of Teeth—by Enoch Noyes, Baltimore,

On the Importance of Regulating the Teeth of Children during the Progress of the Second Dentition—by Solyman Brown, M. D., New-York.

The object of the society in publishing these Essays in the form of cheap tracts, is to enable every individual in the profession to do something if he choose, to inform community of their real wants on the subject of dental practice.

A few dollars annually expended for this object, by every respectable dentist in the United States, would do much in opening the eyes of the public to the urgent importance of judicious dental practice, in every family in the land.

When this system of Essays shall be complete, some one or more of them will be adapted to the wants of every individual in society; and the dentist who feels the importance of disseminating correct information, for the benefit of the public, as well as for the benefit of his profession, will not, we think, allow himself to neglect so favourable an opportunity of doing good.

The remaining essays are as follow:—

On the Importance of Stopping Carious Teeth—by J. H. Foster, M. D. New-York.

On the dangerous effects of salivary Calculus—By Edward Maynard, M. D. Washington.

On the best method of preserving the natural teeth—By L. S. Parmly, M. D. New Orleans.

On the necessity of extracting diseased Teeth—By E. Townsend, Philad,

On the diseases of the Gums—By H. H. Hayden, M. D. Baltimore.

On the First Dentition—By C. A. Harris, M. D. Baltimore.

The acting members of the Society, by which are meant those who have paid their annual dues of five dollars to the treasurer, are entitled by a resolution of the society passed at its last meeting, to twenty-five copies of each of the Essays without charge. Orders for the same will meet the punctual attention of the Recording Secretary.

AN ESSAY ON THE MODE

Of treating Caries of the Teeth, to which is added a general view of the Anatomy and Physiology of the teeth.—By B. A. Rodrigues, M. D., *Dentist, of Charleston, S. C.*

It is unfortunate for the cause alike of science and humanity, that the practice of dentistry has been left to the care of ignorance, as though the structure and diseases of the teeth were unworthy a comprehensive and philosophic investigation, and the sufferings resulting from their morbid conditions were not deserving of relief.—But we live in an age of improvement, and although the prejudices existing against the profession of the dentist, deter many from its adoption, yet intellect and industry of no common order are devoted to its prosecution; and we look forward with exulting hopes to the arrival of a period when dentistry will take its rank as a collateral branch of medical science. The sneers so commonly levelled against dentistry, find their justification in the ignorance of its professors; and such have been the miseries inflicted upon many by their want of skill and knowledge, that suffering humanity cries aloud for legislative interference. Their ready subjection to the causes of disease, and the intense pain resulting from their abnormal condition, demand for the teeth in an especial manner the protection of science; yet they have been treated with a wanton indifference, from which their importance should have sheltered them. Is it because unrestrained by legal enactments (of government) the most vulgar machinists deficient alike in intellect and cultivation, have for mere pecuniary advancement, "tendered their services to the public," that science turns with a sneer from the consideration of the teeth? And is it because accomplished quacks with "patent carbonic-dentifrices," and an endless string of puffs from persons whom nobody knows, have injured, or it may be ruined the teeth; does it follow we ask, that dentistry cannot be practiced on principle, on anatomy and physiology? So long, however, as unprofessional men, may at their pleasure assume the responsibility of the dentist, so long will injurious results follow in the train of practice. Can it be expected that men who do not understand the structure and physiology of the teeth (not to say any thing of the collateral branches) can prescribe for their diseases in a rational manner? And yet there is scarcely one of the branches of study requisite for the attainment of a degree, that is not indispensable to the dentist.

Is anatomy requisite? Can a dentist perform the simplest operation without a thorough knowledge of the structure of the teeth; the manner of their insertion, &c. &c. Is physiology requisite? How can he comprehend their morbid alterations without a proper appreciation of their healthy state? Is therapeutics necessary? Diseased states of the teeth frequently follow an impaired condition of the different functions. Can these be obviated without therapeutics? The extraction of a tooth may occasion syncope—convulsions, &c. Must not these be relieved? Is pathology necessary? The sympathies by which derangements of important functions affect the teeth, render pathology indispensable?—Chemistry? Ought not a dentist to be familiar with the chemical nature of the teeth, and the enamel, lest he prescribe an application that might destroy them? Let the legislature, then, take this matter as it should, under its own jurisdiction; let it require from the dentist knowledge. Let him undergo the regular ordeal through which the physician has to pass. If he be qualified, license him—if unqualified, do not turn loose upon the community a pretender and a quack.

GENERAL VIEW OF THE ANATOMY AND PHYSIOLOGY OF THE TEETH.

In the human adult subject there are sixteen teeth in each maxillary bone. These are divided into four clases, viz: four *incisores*, two *cuspidati*, four *bicuspides*, and six *molares*. Varieties occur in the number of the teeth; but they are very unusual. Mr. Hunter says he once saw twenty-seven, though never more than thirty-two. The writer in Rees' Cyclopedia (article teeth) has collected several cases of an extraordinary number of teeth. Columbus, he says, has seen thirty-three. Fauchard thirty-three and thirty-four; Bourdet thirty-six; and Ingrassias thirty-six, including twenty-four grinders. Arnold met with a boy fourteen years old who had seventy-two teeth.

Each tooth is subdivided into the body or crown, the fang or root, and the neck. The body of the tooth is that portion uncovered by the gum, the root is the articulating medium, and the neck is the point of union between the body and the root. The *incisores* have one root, or fang, and the crown or body has the shape of a wedge. They are placed in the anterior part of the maxillary bone, and when viewed in connexion, form part of a circle. The *cuspidati* are the largest of the teeth, and resemble the *incisores* from which they may be distinguished by the greater pointedness of the crown.

They have been compared to a spear with lateral shoulders, but look as much like it as the clinoid processes of the sphenoid bone resemble four bed-posts, with which the fancy of the anatomist has associated them.—The *bicuspides* partake of the appearance of the *cuspidati* and the *molares*, between which they are situated.

The crown of a *bicuspid* tooth terminates in two points, and the fang is separated so as to resemble two fangs. The *molares* have four or more elevations on the crown. The molares of the lower jaw have two distinct fangs, those of the upper have three. Thomas Bell states that he has seen in a few instances, four fangs, once five fangs to the upper *molares*. The last *molar* tooth has been called the *dens sapientiæ*, because it does not appear until late in life.

In each tooth there is a cavity filled with a spongy substance, endowed with acute sensibility. The vessels and nerves which nourish this structure enter the tooth through the foramen at the extremity of the fang.

Two different substances enter into the structure of the teeth—the one *osseous*, the other called *enamel*. The bony structure is hard and dense, though its texture is the same as the rest of the osseous system. The enamel is the hardest part of the animal body, and forms only the outer covering of the crown of the teeth. The enamel is arranged in fibres closely connected. Hunter says the fibres are directed from the circumference to the centre. Haller and Majendie state that they are perpendicular to the body of the teeth; and Bichat affirms that they cannot be traced at all.

The phosphate and carbonate of lime constitute nearly the whole of the teeth in man. Of 100 parts, Majendie says 99, 5 are of earthy matter. The chemical analysis of the enamel, according to Berzelius, is as follows:

Phosphate of lime,	85.3
Fluate of lime,	3.2
Carbonate of lime,	8
Phosphate of Magnesia,	1.5
Soda and muriate of soda,	1
Animal matter and water,	1
	100

Of 100 parts of the bony substance, according to the same chemist, we have of

Phosphate of lime,	62
Fluate of lime,	2
Carb. of lime,	5.5
Phosphate of Magnesia,	1
Soda and muriate of soda,	1.5
Gelatine and water,	28
	100

The analysis of Mr. Pepys failed to detect the fluate of lime, as also the phosphate of magnesia, soda and muriate of soda, and animal matter. Mr. Brande was also unable to detect the fluate of lime, though he instituted a series of experiments for the purpose. Gay Lussac, however, asserts its existence in the enamel.

The vitality of the teeth is proved by their existence in the living animal. A recent tooth, too, taken from the socket of the jaw bone of one animal, and transplanted into that of another, will be united by a vital process. If time should elapse after extraction, and before the insertion, no union will be formed. If we judged of the vitality of the teeth, however, by their susceptibility to external influences, we would be obliged to look upon them as inorganic substances. They are endowed with a very low degree of sensibility, and in their healthy state, convey no impression to the sensorium. In the application of the file, no pain is experienced, and but for the sensation communicated to what may be called the medullary structure of the teeth, the patient would be ignorant of the operation. Grasp the tooth forcibly with the key, the patient never winces; shatter the tooth with the forceps, he does not complain. When the tip of the finger is brought in contact with a tooth, the impression is made upon the finger and not upon the tooth. If a tooth be struck with a hard body, the sound is communicated to the ear. If gently touched, the interruption to the progress of the hand is the source of sensation.—

If you strike a tooth with violence, pain is felt in its medullary structure. Cold and heat affect the pulpy substance through the bony medium. In rickets, when the jaw bone itself is distorted, the teeth are unaffected.—In mollities osseum, the teeth will be loosened by the absorption of the calcareous part of the alveolar processes, but they themselves remain sound; Bichat says, that the "diluted acids, and especially the vegetable, raise the sensibility of the enamel so much, that the least touch becomes painful a long time after their use. The teeth," he adds, "are then, as we call it, on edge." But the teeth being "on edge" is attributable to the chemical action of the acids destroying the polish upon the enamel, and thus preventing them from gliding easily over each other's surfaces.

These considerations tend strongly to show that the teeth are inorganic. Even caries is no proof of the vitality of the teeth; for may it not be referable to the chemical effect produced by the generation of morbid fluids? The pain usually attributed to the tooth, is no doubt an affection of the nerve or the medulla.

Much yet remains to be learned of the physiology of the teeth. And but for a sort of analogical certainty that every part of the animal body is vital, the phenomena of transplanting, and the effect of the removal of the nerve upon the roots of the teeth, we should be forced to infer, that the teeth were inorganic.

OF CARIES.

Caries of the teeth may be defined to be their chemical or organic decomposition. The term caries, is manifestly incorrect; as the condition of caries of a bone, bears no resemblance to the state of the teeth, ordinarily described under that name.

This disease is not simply the death of the tooth; for when removed from the body no such appearance is observed.

Caries may attack any part of a tooth: it is most common in the crown; but it is very rarely observed in tho root.

CAUSES OF CARIES.

The most general of these, is impaired digestion, or a derangement of some of the functions connected with this important process. Dyspepsia very rapidly induces decay; and I have had frequent opportunities of observing the immediate effect produced by this disease upon the structure of the teeth. Nor are its consequences confined to a single tooth; for many become implicated, and but for the interference of art, all the bodies of the teeth would become one mass of caries.

The general exemption of the roots of the teeth from this disease, is remarkable. Animal food has been said to be a cause of caries; and in support of this it has been observed, that country negroes, who feed mostly upon vegetables, are but slightly liable to this disorder. Lord Kames, in his Sketches of Man, states "that the people of Otaheite never have a rotten tooth;" and attributes this to their living altogether upon vegetables and fish, and their abstaining from stimulating drinks and tobacco.

That uncivilized nations, living upon vegetables, are not subject to caries of the teeth, may be true; but this may be better accounted for by the temperature, than the character of the food, and the healthy condition of the functions resulting from prudence in living.

Carnivorous animals are not particularly, if at all, subject to this disease; and by fair analogy, animal food is not more apt to affect man.—The temperature of our food, however, is no doubt a fruitful source of this, as of other derangements; and the dentist may unquestionably return thanks to modern gastronomy for much of his pecuniary success in life

Want of cleanliness is a common cause of caries; and neglecting the use of the tooth-pick, frequently gives rise to this disease—small particles of food being thus allowed to remain between the teeth, the heat and moisture of the mouth occasion putrefaction, which either acts immediately upon the teeth, or engenders a condition of the gums, which indirectly affects them. The pressure of the teeth upon each other, is a very common excitant of caries; and the contact of a decayed tooth with a sound one, is very apt to produce disease of the latter, though this is staunchly denied by Bell. In enumerating the causes of caries, we must not pass over the use of the file. This instrument, in the hands of an ignorant practitioner, frequently occasions the disease under consideration. The mere contact of the teeth without pressure, is not injurious; yet it is an ordinary resort among dentists to insert the file, for the purpose of obviating this state, and thus in separating the teeth by the removal of the enamel, they nescessarily induce a diseased condition of these organs.

TREATMENT OF CARIES.

The pain produced by a decayed tooth, as almost every one is aware from individual suffering, is of the most intense kind, and the patient in vain seeks for relief. Numerous remedies have been proposed, and quackery has not been idle in offering infallible remedies for the "tooth ache." Stimulating applications to the diseased part, are generally much resorted to; but the practice which my own experience teaches me as most beneficial, is the application of leeches to the gums, especially if there be tumefaction. A little camphor and opium, or alum and sweet spirits of nitre, will likewise frequently mitigate the sufferings. But there is no effectual remedy but the plugging of the tooth, or its removal.

In case, however, the patient will not submit to these operations, resort may be had to the means already spoken of.

The first step to be taken in the treatment of decayed teeth, should be to relieve the surrounding structures, and the teeth themselves, from all inflammation, whether idiopathic or symptomatic. To accomplish this, due attention should be paid to the state of the system. Local and general blood-letting, cathartics, &c., if necessary. After inflammatory action has been thoroughly subdued, we should proceed very carefully to remove all accumulations, whether of food or disease, from the cavity of the tooth or teeth affected.

[The instruments used for the purpose of excavating the tooth, and cutting out the decay, are blades of steel with cutting extremities fixed into ivory or pearl handles. They are of various shapes and sizes, so as to be adapted to the size of the cavity to be operated upon. There are other instruments used for this purpose, such as are termed file head borers, broaches, &c. Observations however can alone furnish the requisite information for they are innumerable, being frequently constructed for the occasion.]

When this is done, the cavity should be wiped perfectly dry with a piece of cotton attached to the point of some sharp instrument. The object then is to fill the cavity with some indestructible material. The preference is usually given to gold, because it is less liable to be corroded than any other metal used for the purpose. The mode of operating is as follows: Cut the gold leaf in small, square pieces. A piece is then taken upon the point of the filling instrument. (This is simply a piece of steel, about two inches in length, blunt at the end, and made of any shape. A number and variety of these should always be kept, so as to be adapted to different teeth and cavities.)

The gold is carefully inserted, and gently pressed so as to allow it to be well packed at the bottom of the cavity. Piece after piece is to be then introduced until the cavity is filled. Force is then to be used so as to make the plugging firm. Some Surgeon Dentists are in the habit of taking the gold on the point of the instrument, and applying immediate force, the consequence of this is injurious. The gold leaf becomes so compact and hard, that it cannot be worked and pressed so as to take on the form of the cavity; and before the tooth has been filled from the difficulty of working the gold, the operation is thought to be over, when really it is hardly more than half done. When the *lining* membrane of the tooth is exposed, the best mode of proceeding is as follows. After you have cleaned the cavity, and cut away the caries properly, apply a plate of lead over the exposed nerve, and then fill with gold. In order that this operation should prove successful, it should be performed with a great degree of care, for the smallest error will inevitably destroy the vitality of the tooth. The operation will prove unsuccessful if the least portion of decay be suffered to remain in the cavity, for this will soon act destructively on the neighbouring parts, by irritating and inflaming them. All moisture must be removed, before the introduction of the metal: for should there be any intervening fluid, galvanic effects might be the consequence, and result in irritation and inflammation of the nerve. In performing this operation, considerable tact is necessary to ensure a successful termination. Dr. Kœcker was the first who introduced lead into practice.

The following extract from his work may prove interesting. He says he " believes this metal to have a cooling and anti-inflammatory effect uppon the irritable nerve of the tooth, at least that it possesses these qualities in a greater degree than gold." " When in the commencement of my practice," he continues, " I employed gold exclusively, I was seldom successful in my labours, for inflammation, pain, &c., generally came on and obliged me in a short time to remove the tooth. I therefore resorted to the use of tin foil as an experiment, and with this metal my success was more frequent, though not what I desired it to be ; for when the operation succeeded with this metal, it did not from its great liability to corrode, remain long a protection to the nerve. In all cases where tin foil is used, the tooth is preserved, but for a few years, for the saliva dissolving and uniting with the metal, may act even more destructively than the disease itself.

On recollecting the cases so generally known of leaden bullets, even when rough and battered, having remained for years imbedded in flesh, I was naturally induced to resort to the use of lead in this operation. I do not recollect to have heard that a case has been reported of any other metal remaining in the body for a long period, without exciting inflammation and suppuration in the surrounding parts. My experience has ever since strengthened the opinion I drew from these facts; and I am more confident than ever that this substance is less irritating to living parts than any other metal."

I have had during my practice, a number of cases of exposed nerve which I treated in the above described manner, and always met with success. The following case is from my note book:

An aged gentleman, Mr. C., called on me in 1832 to have a tooth extracted which had given him pain for five or more years. He described the pain as not very severe, and as coming on at intervals. I examined the tooth* and found it much decayed on the external side, extending a little below the neck of the tooth, and consequently deprived of its gum. As the grinding surface of the tooth was in a sound state, I thought it might be made useful to him. I therefore proposed filling the tooth.—The old gentleman manifested considerable reluctance, and dwelt on the length of time the tooth had troubled him, the extent of the decay, and the difficulty as he thought of saving it. I still, however, insisted on the operation, and positively refused to extract it. He finally consented to submit to the experiment. I commenced by carefully cutting away the decayed or diseased portion of the tooth, and prepared the cavity without giving him much pain. I then applied over the exposed nerve, a plate of lead, and proceeded in the manner already mentioned. The next day he came to me, complaining that he suffered with the tooth all night, and that he was deprived of sleep.

He insisted on having it out: I succeeded once more in persuading him to suffer the tooth to remain, assuring him that the pain resulted from the cleaning of the cavity, and the expansion of the metal subsequently introduced. This satisfied him, and he took leave saying, that he would return in the morning, and if he experienced any pain during the night, he would positively have it extracted. Accordingly the next morning he came round with the full determination to have the tooth removed. I interrogated him as to the nature of the pain he experienced. He described it as dull and throbbing, and coming on at intervals. I inquired if it were as severe as before? He answered that it was not; but still insisted upon its extraction. I took up my instrument very reluctantly—examined the tooth—cut the gum—and applied the tooth drawers; and when about to extract it, withdrew the instrument, and begged my patient to wait another day. After a little persuasion he consented. The next day (the fourth) I saw him. He told me that the pain had been so trifling, that it was scarcely worth talking about; and from that period until the present time the tooth has never given him one moment's pain, and is as useful to him as any other. This is the most tedious case of the kind, I have met with. I might relate others, in all of which I have been successful with the treatment under consideration. I trust, however, this case will suffice to show the utility of lead, under the circumstances alluded to.

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* The second mollar of the inferior maxillæ.

NOTE.—The Editors and Publishing Committee repeat a notice which they gave in a former number, that they do not hold themselves responsible for the sentiments expressed in the articles of this Journal not written by themselves. They often admit articles, the correctness of which they altogether doubt, for the sake of free discussion.—PUB. COM.

Norwalk, Ct. April 23rd, 1841.

DR. SOLYMAN BROWN,

DEAR SIR—I herewith transmit to you, an account of that remarkable case of Salivary Calculi to which my attention was solicited some time since; the specimens of which I exhibited to you in N. York not long ago. And I very much regret, that a want of time should prevent that thorough investigation of the subject that so remarkable a case seems to require.

Many valuable and elaborate treatisies have been written, and much ingenuity has been exhausted, on the subject of Urinary Calculi. Stores of learning, and much treasured thought have been spent, in trying to investigate and understand the nature of that peculiar constitutional diathesis which predisposes to this painful disease. But as yet I have seen comparatively little on the kindred subject of salivary calculi—I say kindred subject, for I can scarcely resist the conviction that the same diathesis predisposes to both these complaints, and that a peculiar irritability, similar in its nature in both organs, invites disease, either to the one part or the other. I am led to this conclusion, not only from the analogy that exists between the two organs, that are the seats of disease, but from the similarity of diseased action in both—both secreting the phosphate of lime, and the earthy salts, in combination with different acids in a remarkable manner,—and the diseased action of either, or both, accompanied with a loose strumous habit.* Indeed so strikingly manifest has this been in many cases, that I have been led to conclude, that in all similar instances there is a predominant glandular irritation throughout the system; and that the primary cause of this disease, may be found in that which produces a vitiated state of the secretions.—I cannot stop here to enquire into all the causes, that may have induced this derangement in the secretory organs. It is sufficient at present to observe, that in very many instances, it appears as the sequel of a course of mercurial medicines, that have been administered, as remedial agents, in cases of disease. And now, if there be any propriety or correctness in the view which we have here taken of this complaint, brief as it may be, it will suggest to us a rational system of treatment; and strange as it may seem, such a system of treatment is yet a desideratum in medical literature. And if a treatment of a local character merely, was all that demanded the attention of the dental practitioner, and no knowledge of the human system, or the numerous morbid changes to which it is liable, was necessary, then indeed, would there be a more plausible excuse for the palpable ignorance of so many who assume the important duties of the surgeon dentist. But as the treatment of these diseases very properly comes under his care, and within the appropriate sphere of his practice, and the treatment not merely local, but constitutional, a tolerably correct knowledge of anatomy, physiology, pathology and therapeutics, seems indispensable; for without it he will be constantly exposed to the charge of quackery, and downright charlatanism—nor will the opprobrium be misapplied.

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* It is conceded by our most eminent writers, on both urinary and salivary calculi, and the opinion is confirmed by common observation, that bilious and scorbutic habits are by far the most subject to affections of this kind. The characteristics, however, of these earthy concretions, vary in different temperaments, so that a person at all exercised in this sort of inquiry, can, by their inspection, tell the habit of the individual from which they are taken.—EDS.

But to the case: — Sometime last fall, a lady called on me, expressing a desire that I should examine her mouth, and stated at the same time that "something was growing there exceedingly troublesome." On examination I found that a solid mass of calcarious matter, extended from the sub-linguial glands back to the angle of the jaw; and in one continuous mass from the articulation of the jaw to the superior bicuspids, on the right side, and also on the lower jaw, extending from the root of the tongue to the tops of the teeth, in width nearly one inch. I forthwith removed it from the mouth, and found it smoothe on its upper side, but presenting a rough and sponge-like appearance on its lower surface, and of a greenish colour. The gums were very much inflamed, loose, and flabby. A large abscess had previously formed on the outside of the face, corresponding with the mass on the inside, and much pain, and iritation, was the consequence. The patient was about forty years of age, and of a decidedly strumous habit. She stated to me, that it was about three years since it began to accumulate in this way; and that during that period, she had removed several pieces from her mouth. I have estimated the weight of that portion which I removed from the mouth, at seventy-eight grains.

By local applications, and constitutional remedies, I have succeeded in subduing that strong tendency of the system to this disease.

I remain, very respectfully, yours, &c. A. HILL.

NOTICE.—The Diplomas of the American Society of Dental Surgeons, are now ready for delivery to the members. A Certificate from the Treasurer, E. Baker, M. D., No. 6 Warren-st. N. York, presented to the Recording Secretary, Solyman Brown, M. D. 13 Park Place, N. Y. and stating that the sum of ten dollars in addition to the annual dues of five dollars has been sent to the treasury, will authorize the secretary to issue the Diploma.

A Catalogue of the Officers and Members of the American Society of Dental Surgeons, for 1841—2, has been published by order of the Society, copies of which on parchment, satin, or fine drawing or silk paper, can be had at one dollar each by applying to the subscriber. The satin, or silk paper copies may be sent by mail, without great expense or injury.

SOLYMAN BROWN, Recording Secretary.

ERRATA.

Page 242, third line from bottom, for "*fitful,*" read "*pitiful.*"
" Next line, for "*an* infant enterprize," read "*our* infant enterprize."
" 243, about the middle of the page, for "*inquiring,*" read "*inquiry.*"
" 214, 7th line, for "*and* bound up, &c" read "*are* bound," &c.
" 244. last line, for "*management,*" read "*arrangement.*"
" 246, 7th line, for "*disperse*" read "*disprove,*" 10th line, for "*sensible*" read "*sensibility.*" 36th line, for "*wiser*" read "*wise.*"
" 248, 16th line, 2d paragraph for "if they are *not* natural," read "if they *are* natural."
" 250, for "Anarcharsis *Clooty,*" read ' Anarcharsis *Cloolz.*"
" 252, 4th paragraph, for "*secreting,*" read "*scrutiny.*" 254, 11th line, for "*increased,*" read "*inverse.*" 257. 2d line, a period is misplaced.

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JOHN HUNTER.

Drawn for the American Journal of Dental Science.

Bufford's Lith. 136 Nassau St. N. Y.

THE

NATURAL HISTORY

OF THE

HUMAN TEETH,

EXPLAINING THEIR

STRUCTURE, USE, FORMATION, GROWTH, AND DISEASES,

ILLUSTRATED WITH PLATES.

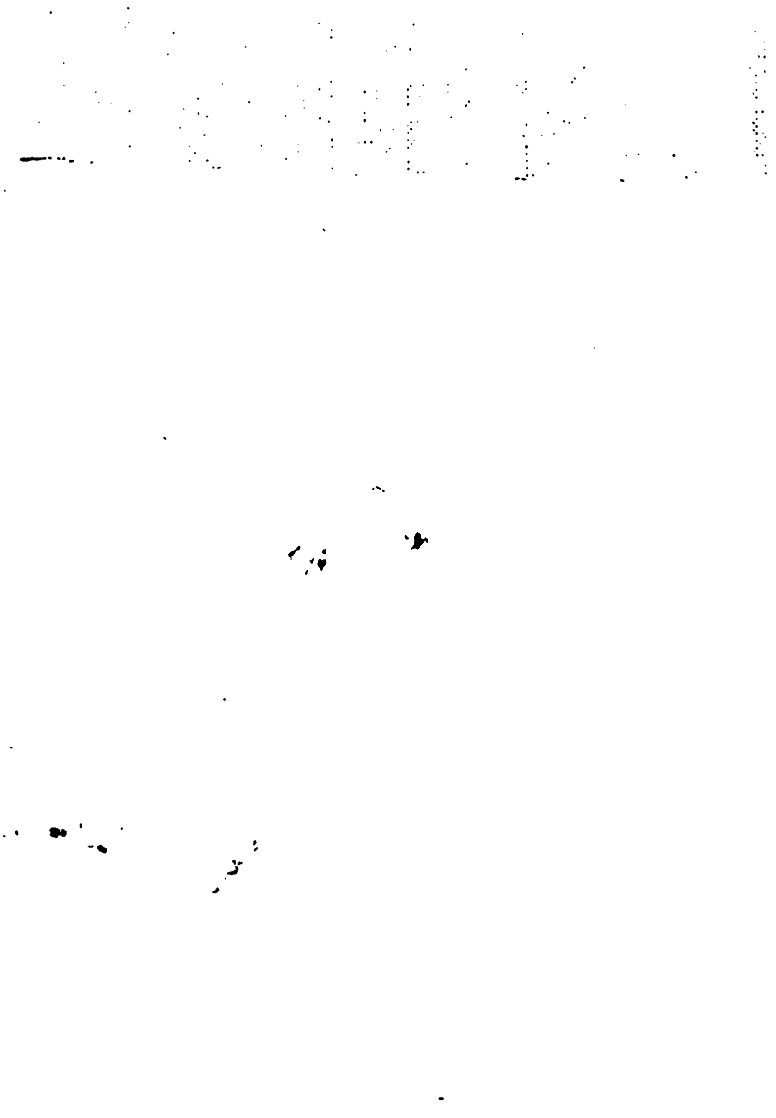
BY JOHN HUNTER,

SURGEON EXTRAORDINARY TO THE KING, AND F.R.S. LONDON.

WITH NOTES,

BY ELEAZAR PARMLY.

NEW-YORK :
1839.



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ELEAZAR PARMLY.

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ELEAZAR PARMLY.

BIOGRAPHY

OF

JOHN HUNTER.

A LIFE and character like that of John Hunter has many claims upon the honourable remembrance of society; the more, because, for meritorious members of his profession, there is no other public reward than the general approbation of good men. We look upon him with that interest which genius successfully directed to good ends invariably excites; as one whose active labours in the service of mankind have been attended with useful consequences of great extent; and whose character it is important to describe correctly, as a valuable example to his profession.

John Hunter was the son of a small proprietor in the parish of Kilbride in Lanarkshire, Scotland, and was born February 13, 1728. His father died while he was a child; his brothers were absent from home; and, being left to the care of his mother and aunt, he was spoiled by indulgence, and remained uneducated, until his natural good sense urged him to redeem himself in some degree from this reproach. When a boy he continued to cry like a child for whatever he wanted. There is a letter extant from an old friend of the family which has this curious postscript, "Is Johnny aye greeting yet?" presenting an unexpected picture to those who are familiar only with the manly sense, and somewhat caustic manners, of the great physiological and surgical authority. But the influence of feelings and opinions, proceeding from respected persons, and accompanied by offices of affection, is powerful upon the young mind; and the circumstances of Mr. Hunter's family were calculated to give such feelings their full power over such a character as his. They lived retired, in that state of independence which a small landed property confers on the elder members, while the young men are compelled to seek their fortunes at a distance from home. John Hunter neglected books, but he was not insensible to the pride and gratification expressed by every member of the family on hearing of his elder brother William's success, and the pleasure which that brother's letters gave to all around him. These feelings made him ashamed of his idleness, and inclined him to go to London, and become an assistant to Dr. William Hunter in his anatomical inquiries. William consented to this arrangement; and the subject of our memoir quitted his paternal home in 1748; certainly without that preparation of mind which should lead us to expect a very quick proficiency in medical pursuits. At an earlier age he had displayed a turn for mechanics, and a manual dexterity, which led to his being placed with a cabinet-maker in Glasgow to learn the profession: but the failure of his master had obliged him to return home. Dr. William Hunter had at this time obtained celebrity as a teacher of anatomy. He won his way by very intelligible modes. His upright conduct and high mental cultivation gained him friends; and his professional merits were established by his lectures, which, in extent and depth, as well as eloquence, surpassed any that had yet been delivered. There was a peculiar ingenuity in his demonstrations, and he had a happy manner exactly suited to his subject. The vulgar portion of the public saw no marks of genius in the successful exertions of Dr. Hunter; his eminence was easily accounted for, and excited no wonder.—They saw John Hunter's success, without fully comprehending the cause; and it fell in with their notions of great genius that he was somewhat abrupt and uncourtly.

Dr. Hunter immediately set his brother to work upon the dissection of the arm. The young man succeeded in producing an admirable preparation, in which the mechanism of the limb was finely displayed. This at once showed his capacity, and settled the relation between the two brothers. John Hunter became the best practical anatomist of the age, and proved of the greatest use in forming Dr. Hunter's splendid museum, bequeathed by the owner to the University of Glasgow. He continued to attend his brother's lectures; was a pupil both at St. Bartholomew's and St. George's Hospitals; and had the farther advantage of attending the celebrated Cheselden, then retired to Chelsea Hospital. And here we must point out the advantage which John Hunter possessed in the situation and character of his elder brother, lest his succes shoud encourage a laxity in the studies of those who think they are following his footsteps. It would indeed have been surprising that his efforts for the advancement of physiology commenced at the precise point where Haller's stopped, if he had really been ignorant of the state of science at home and abroad. But he could not have been so, unless he had shut his eyes and stopped his ears. In addition to his anatomical collection, Dr. Hunter had formed an extensive library, and possessed the finest cabinet of coins in Europe. Students crowded around him from all countries, and every one distinguished in science desired his acquaintance. John Hunter lived in this society, and at the same time had the advantage of being familiar with the complete and systematic course of lectures delivered by his brother. He was thus furnished with full information as to the actual state of physiology and pathology, and knew in what directions to push inquiry, whilst the natural capacity of his fine mind was untramelled.

In 1755, John Hunter assisted his brother in delivering a course of lectures; but through life the task was a painful one to him, and he never attained to fluency and clearness of expression. In 1760, his health seems to have been impaired by his exertions: and in the recollection that one brother had already died under similar circumstances, his friends procured him a situation in the army, as being less intensely laborious than his mode of life. He served as a staff surgeon in Portugal and at the siege of Bellisle. On returning to London he recommenced the teaching of practical anatomy.

In 1767, he was elected a fellow of the Royal Society, having already gained the good opinion of its members, by several papers on most interesting subjects. There is this great advantage in the pursuit of science in London, that a man remarkable for success in any branch can usually select associates the best able to assist him by their experience and advice. It was through John Hunter's influence that a select club was formed out of the fellows of the Royal Society. They met in retirement, and read and criticised each other's papers before submitting them to the general body. This club originally consisted of Mr. Hunter, Dr. Fordyce, Sir Joseph Banks, Dr. So-lander, Dr. Maskelyne, Sir George Shuckburgh, Sir Henry Englefield, Sir Charles Blagden, Mr. Ramsden, and Mr. Watt. To be the associate of such men could not but have a good effect on a mind like Hunter's active and vigorous, but deficient in general acquirement, and concentrated upon one pursuit.

At this time, and for many years afterwards, he was employed in the most curious physiological inquiries; and at the same time forming that museum, which remains the most surprising proof both of his genius and perseverance. It is strange that Sir Everard Home should have considered this collection as a proof of the patronage Hunter received. He had many admirers, and many persons were grateful for his professional assistance; but he had no patrons. The extent of his museum is to be attributed solely to his perseverance; a quality which is generally the companion of genius, and which he displayed in every condition of life. Whether under the tuition of his brother, or struggling for independence by privately teaching anatomy, or admidst the enticements to idleness in a mess-room, or as an army surgeon in active service, he never seems to have forgotten that science was the chief end of his life. Hence the amazing collection which he formed of anatomical preparations; hence too the no less extraordinary accumulation of important pathological facts, on which his principles were raised.

It was only towards the close of life that Hunter's character was duly appreciated. His professional emoluments were small, until a very few years before his death, when they amounted to £6000 a year. When this neglect is the portion of a man of distinguished merit, it has sometimes an unhappy influence on his profession. Men look for prosperity and splendour as the accompanyments of such merit; and, missing it, they turn aside from the worthiest models, to follow those who are gaining riches in the common routine of practice. Dr. Darwin said that he rejoiced in Hunter's late success as the concluding act of a life well spent; as poetical justice. But throughout life he spent all his gains in the pursuit of science, and died poor.

His museum was purchased by government for £15.000. It was offered to the keeping of the College of Physicians, which declined the trust. It is now committed to the College of Surgeons, in Lincoln's Inn Fields; where it is open to the inspection of the public during the afternoons of Monday, Wednesday, and Friday. The corporation has enlarged the museum, instituted professorships for the illustration of it, and is now forming a Library. The most valuable part of the collection is that in the area of the great room, consisting of upwards of 2000 preparations, which were the results of Mr. Hunter's experiments on the inferior animals, and of his researches in morbid human anatomy. All these were originally arranged as illustrative of his lectures. The first division alone in support of his theory of inflammation, contains 602 preparations. Those illustrative of specific diseases amount to 1084. There are besides 652 dried specimens, consisting of diseased bones, joints, and arteries. On the floor, there is a very fine collection of the skeletons of man and other animals; and if the Council of the College continue to augment this collection with the same liberal spirit which they have hitherto shown, it will be creditable to the nation. The osteological specimens amount to 1936. But the most interesting portion; we might say one of the most interesting exhibitions in Europe to a philosophical and inquiring mind, is that which extends along the whole gallery. Mr. Hunter found it impossible to explain the functions of life by the investigation of human anatomy, unaided by comparison with the simpler organization of brutes; and therefore he undertook the amazing labour of examining and preparing the simplest animals, gradually advancing from the lower to the higher, until, by this process of synthesis, the structure of the human body was demonstrated and explained. Let us take one small compartment in order to understand the effect of this method. Suppose it is wished to learn the importance of the stomach in the animal economy. The first object presented to us is a hydatid an animal, as it were, all stomach; being a simple sac with an exterior absorbing surface. Then we have the polypus, with a stomach opening by one orifice, and with no superadded organ. Next in order is the leech, in which we see the beginning of a complexity of structure. It possesses the power of locomotion, and has brain, and nerves, and muscles, but as yet the stomach is simple. Then we advance to creatures in which the stomach is complex: we find the simple membraneous digesting stomach; then the stomach with a crop attached to macerate and prepare the food for digestion; then a ruminating stomach with a succession of cavities, and with the gizzard in some animals for grinding the food, and performing the office of teeth; and finally, all the appended organs necessary in the various classes of animals; until we find that all the chylopoietic viscera group round this, as performing the primary and essential office of assimilating new matter to the animal body.

Mr. Hunter's papers and greater works exhibit an extraordinary mind: he startles the reader by conclusions, the process by which they were reached being scarcely discernible. We attribute this in part to that defective education which made him fail in explaining his own thoughts, and the course of reasoning by which he had arrived at his conclusions. The depth of his reflective powers may be estimated by the perusal of his papers on the apparently drowned, and on the stomach digested after death by its own fluids. The importance of discovering the possibility of such an occurence as the last is manifest, when we consider its connexion with medical jurisprudence, and the probability of its giving rise to unfounded suspicions of poisoning. His most important papers were those on the muscularity of arteries; a fine piece of experimental reasoning, the neglect of which by our continental neighbours threw them back an age in the treatment of wounded arteries and aneurisms. But the grand discovery of Mr. Hunter was that of the life of the blood. If this idea surprise our readers, it did no less surprise the whole of the medical profession when it was first promulgated. Yet there is no doubt of the fact. It was demonstrated by the closest inspection of natural phenomena, and a happy suite of experiments that the coagulation of the blood is an act of life. From this one fact, the pathologist was enabled to comprehend a great variety of phenomena, which without it, must have ever remained obscure.

Mr. Hunter died of that alarming disease, *angina pectoris:* alarming because it comes in paroxysms, accompanied with all the feelings of approaching death. These sensations are brought on by exertion or excitement. In St. George's Hospital the conduct of his colleagues had provoked him; he made no observations, but, retiring into another room, suddenly expired October 16, 1793.

After these details no man will deny that John Hunter possessed high genius, and that he employed his talents nobly. He was indeed of a family of genius: his younger brother was cut off early, but not until he had given promise of eminence. Dr. Hunter was in our opinion, equal in talents to John, the subject of this memoir, though his mind received early a different bias. And in the next generation the celebrated Dr. Baillie, nephew to these brothers, contributed largely to the improvement of pathology, and afforded an instance of the most active benevolence joined to a plainness of manner most becoming in a physician. Joanna Baillie, his sister, still lives, honoured and esteemed, and will survive in her works as one of our most remarkable female writers.

A portrait of John Hunter was painted, at the suggestion of the celebrated engraver Sharpe, by Sir Joshua Reynolds, and was among his last works. There could not indeed be a more picturesque head, nor one better suited to the burin. The original picture is in the College of Surgeons. It exhibits more mildnes than we see in the engraving of Sharpe.

THE

NATURAL HISTORY

OF THE

HUMAN TEETH.

OF THE UPPER JAW.

Before we enter into a description of the Teeth themselves, it will be necessary to give an account of the Upper and Lower Jawbones, in which they are inserted; insisting minutely on those parts which are connected with the Teeth, or serve for their motion and action, and passing over the others slightly.

The Upper Jaw is composed of two bones, which generally remain distinct through life. They are very irregular at their posterior and upper parts, sending upwards and backwards a great many processes, that are connected with the bones of the face and skull. The lower and anterior parts of the Upper Jaw are more uniform, making a kind of a circular sweep from side to side, the convexity of which is turned forward; the lower part terminates in a thick edge, full of sockets for the teeth. This edge is called in each bone the Alveolar Process. Behind the Alveolar Processes there are two horizontal lamellæ, which uniting together, form part of the roof of the Mouth, which is the partition between the Mouth and the Nose.

This plate, or partition, is situated about half an inch higher than the lower edge of the Alveolar Process; and this gives the roof of the Mouth a considerable hollowness.

The use of the Upper Jaw is to form part of the Parietes of the Mouth, Nose, and Orbits; to give a basis, or supply the Alveolar Process, for the superior row of Teeth and to counteract the Lower Jaw; but it has no motion itself upon the bones of the Head and Face.

OF THE LOWER JAW.

As the Lower Jaw is etremely moveable, and its motion is indispensibly necessary in all the various operations of the Teeth, it requires to be more particularly described. It is much more simple in its form than the Upper, having fewer processes, and these not so irregular. Its anterior circular part is placed directly under that of the Upper-Jaw: but its other parts extend father backwards.

This Jaw is at first composed of two distinct bones; but these, soon after birth, unite into one, at the middle of the chin. This union is called the Symphysis of the Jaw. Upon the upper edge of the body of the bone is placed the Alveolar Process, a good deal similar to that of the upper Jaw. The Alveolar Process extends all round the upper part of the bone, from the Coronoide Process of one side, to that of the other. In both Jaws they are every where relatively proportional to the Teeth; being thicker behind, where the Teeth are larger, and more irregular, upon account of the more numerous fangs inserted into them. The Teeth that are situated backwards, in the Upper-Jaw, have more fangs than those that correspond with them in the lower, and the sockets are accordingly more irregular. The Alveolar Process of the upper-Jaw, is a section of a larger circle than that of the lower, especially when the Teeth are in the sockets. This arises chiefly from the anterior teeth in the Upper-Jaw being broader and flatter than those in the lower. The posterior part of the bone on each side rises almost perpendicularly, and terminates above in two processes: the anterior of which is the highest, is thin and pointed, and is called the Coronoide Process. The anterior edge of this process forms a ridge, which goes obliquely downward and forward on the Jaw, upon the outside of the posterior sockets. To this process the Temporal Muscle is attached; and as it rises above the centre of motion, that Muscle acts with nearly equal advantage in all the different situations of the Jaw.

The Posterior Process, which is made for a moveable articulation with the head, runs upward, and a little backward; is narrower, thicker and shorter, than the anterior; and terminates in an oblong rounded head, or Condyle, whose longest axis is nearly transverse. The Condyle is bended a little forward; is rounded, or convex, from the fore to the back part; and likewise a little rounded from one end to the other, or from right to left. Its external end is turned a little forward, and its internal a little backward; so that the axes of the two Condyles are neither in the same straight line, nor parallel to each other; but the axis of each Condyle, if continued backwards, would meet, and form an angle of about one hundred and forty-six degrees; and lines drawn from the Symphysis of the Chin, to the middle of the Condyle, would intersect their longest axis, at nearly right angles. There are, however, some exceptions; for in a Lower-jaw, of which I have a drawing, the angle formed by the supposed continuation of the two axes, instead of being an angle of one hundred and forty-six degrees, is of one hundred and ten only. The

Lower-Jaw serves for a base to support the Teeth in the Alveolar Process, during their action on those of the upper-jaw in mastication; and to give origin to some muscles that belong to other parts.

OF THE ALVEOLAR PROCESSES.

The Alveolar Processes are composed of two thin bony plates, one external, and the other internal. These two plates are at a greater distance from each other at their posterior ends, than at the anterior or middle part of the Jaw. They are united together by thin bony partitions going across, which divide the processes at the anterior part, into just as many distinct sockets as there are Teeth; but at the posterior part, where the teeth have more than one root or fang, there are distinct cells, or sockets, for every root. These transverse partitions are more protuberant than the Alveolar Plates; and thus add laterally to the depth of the cells, particularly at the anterior part of the Jaw. At each partition, the external plate of the Alveolar Process is depressed, and forming furrows, or a fluting rounds the cells, or cavities, for the roots of the teeth. This is observable in the whole length of the Alveolar Process of the Upper-Jaw; and in the fore-part particularly of the Lower-Jaw. The Alveolar Processes of each Jaw, form about one half of a circular, or rather of an elliptical figure; and at the forepart in the Lower-Jaw they are perpendicular, but project inwards at the posterior part, and describe a smaller circle than the body of the bone upon which they stand; as we shall observe more particularly hereafter, when we come to treat of the Jaws of old People.

The Alveolar Processes of both Jaws should rather be considered as belonging to the Teeth, than as parts of the Jaws; for they begin to be formed with the teeth, keep pace with them in their growth, and decay, and entirely disapear, when the teeth fall; so that, if we had no teeth, it is likely we should not only have no sockets, but not even these processes, in which the sockets are formed; and the Jaws can perform their motions, and give origin to muscles, without either the teeth, or Alveolar Processes. In short, there is such a mutual dependence of the teeth, and Alveolar Processes on each other, that the destruction of the one seems to be always attended with that of the other.

In the head of a young subject which I examined, I found that the two first incisor teeth in the upper-jaw had not cut the Gum; nor had they any root or fang, excepting so much as was necessary to fasten them to the Gum, on their upper surface; and on examining the Jaw, I found there was no Alveolar Process, nor sockets, in that part. What had been the cause of this I will not pretend to say: whether it was owing to the teeth forming not in the Jaw, but in the Gum; or to the wasting of the fangs. The appearance of the tooth favoured the first supposition; for it was not like those, whose fangs are decayed in young subjects, in order to the shedding of the teeth;

and as it did not cut the Gum, it is reasonable to think it never had any fang. That end from which the fang should have grown, was formed into two round and smooth points, having each a small hole leading into the body of the tooth, which was pretty well formed.

OF THE ARTICULATION OF THE LOWER JAW.

Just under the beginning of the Zygomatic Process of each Temporal Bone, before the external Meatus Auditorius, an oblong cavity may be observed; in direction, length, and breadth, in some measure corresponding with the Condyle of the Lower-Jaw. Before, and adjoining to this cavity, there is an oblong eminence, placed in the same direction, convex upon the top, in the direction of its shorter axis, which runs from behind forwards; and a little concave in the direction of its longer axis, which runs from within outwards. It is a little broader at its outer extremity; as the outer corresponding end of the Condyle describes a larger circle in its motion than the inner. The surface of the cavity, and eminence, is covered with one continued smooth cartilaginous crust, which is somewhat ligamentous, for by putrefaction it peels off, like a membrane, with the common Periosteum. Both the cavity and eminence serve for the motion of the Condyle of the Lower-Jaw. The surface of the cavity is directed downward; that of the eminence downward and backward, in such a manner that a transverse section of both would represent the Italic letter *S*. Though the eminence may, on a first view of it, appear to project considerably below the cavity, yet a line drawn from the bottom of the cavity, to the most depending part of the eminence, is almost horizontal, and therefore nearly parrellel with the line made by the grinding surfaces of the teeth in the Upper-Jaw; and when we consider the Articulation farther, we shall find that these two lines are so nearly parallel, that the Condyle moves almost directly forwards, in passing from the cavity to the eminence; and the parallelism of the motion is also preserved by the shape of an intermediate cartilage.

In this joint there is a moveable cartilage, which, though common to both Condyle and cavity, ought to be considered rather as an appendage of the former than of the latter, being more closely connected with it; so as to accompany it in its motion along the common surface of both the cavity and eminence. This cartilage is nearly of the same dimensions with the condyle, which it covers; is hollowed on its inferior surface, to receive the Condyle: on its upper surface it is more unequal, being moulded to the cavity and eminence of the articulating surface of the Temporal bone, though it is considerably less, and is therefore capable of being moved with the Condyle, from one part of that surface to another. Its texture is ligamento-cartilaginous. This moveable cartilage is connected with both the Condyle of the Jaw, and the articulating surface of the Temporal Bone, by distinct ligaments, arising from its edges all round. That by which it is attached to the Temporal Bone, is the most free and loose; though both ligaments will allow an easy motion, or sliding of the cartilage on the respective surfaces of the Condyle, and Temporal bone. These attachments of the cartilage are strengthened, and the whole articulation secured, by an external ligament, which is common to both, and which is fixed to the Temporal bone, and to the neck of the Condyle. On the inner surface of the ligament, which attaches the cartilage to the Temporal Bone, and backwards, in the cavity, is placed what is commonly called the Gland of the Joint; at least, the ligament is there much more vascular than at any other part.

OF THE MOTION IN THE JOINT OF THE LOWER JAW.

The Lower-Jaw, from the manner of its articulation, is susceptible of a great many motions. The whole Jaw may be brought horizontally forwards, by the Condyles sliding from the cavity towards the eminences on each side. This motion is performed chiefly when the teeth of the Lower-Jaw are brought directly under those of the Upper, in order to bite, or hold any thing very fast between them.

Or, the Condyles only may be brought forwards, while the rest of he Jaw is tilted backwards, as in the case when the mouth is open; for on that occasion the angle of the Jaw is tilted backwards, and the chin moves downwards, and a little backwards also. In this last motion, the Condyle turns its face a little forwards; and the centre of motion lies a little below the Condyle, in the line between it and the angle of the Jaw. By such an advancement of the Condyles forwards, together with the rotation mentioned, the aperture of the mouth may be considerably enlarged; a circumstance necessary on many obvious occasions.

The Condyles may also slide alternately backwards and forwards, from the cavity to the eminence, and *vice versa*; so that while one Condyle advances, the other moves backwards, turning the body of the Jaw from side to side, and thus grinding, between the teeth, the morsel separated from the larger mass by the motion first described. In this case, the center of motion lies exactly in the middle between the two Condyles. And it is to be observed, that in these slidings of the Condyles forwards and backwards, the moveable cartilages do not accompany the Condyles in the whole extent of their motion; but only so far as to adapt their surfaces to the different inequalities of the Temporal Bone: for as these cartilages are hollow on their lower surfaces where they receive the Condyle, and on their opposite upper surfaces are convex where they lie in the cavity; but forwards at the root of the eminence, that upper surface is a little hollowed; if they accompanied the Condyles through the whole extent of their motion, the eminences would be applied to the eminences, the cavities would not be filled up, and the whole articulation would be rendered very insecure.

This account of the motion of the Lower-Jaw, and its cartilages, clearly demonstrates the principle use of these cartilages : namely, the security of the articulation ; the surfaces of the cartilage accommodating themselves to the different inequalities, in the various and free motions of this joint. This cartilage is also very serviceable for preventing the parts from being hurt by the friction ; a circumstance necessary to be guarded against, where there is so much motion. Accordingly, I find this cartilage in the different tribes of Carnivorous Animals, where there is no eminence and cavity, nor other apparatus for grinding ; and where the motion is of the true ginglimus kind only.

In the Lower-Jaw, as in all the joints of the body, when the motion is carried to its greatest extent, in any direction, the muscles and ligaments are strained, and the person made uneasy. The state, therefore, into which every joint most naturally falls, especially when we are asleep, is nearly in the middle, between the extremes of motion ; by which means all the muscles and ligaments are equally relaxed. Thence it is, that commonly, and naturally, the Teeth of the two Jaws are not in contact ; nor are the Condyles of the Lower-Jaw so far back in the Temporal Cavities as they can go.

OF THE MUSCLES OF THE LOWER JAW.

Having described the figure, Articulation, Motion, and use of the Lower-Jaw, it will be necessary, in the next place, to give some account of the Muscles that are the causes of its motion.

There are five pairs of Muscles, each of them capable of producing various motions, according to the situation of the Lower-Jaw, whether they act singly, or in conjunction with others ; and two or more of them may be so situated, as to be capable of moving the Jaw in the same direction ; and every motion is produced by the action of more than one Muscle at a time. Thus, if the Jaw is depressed, and brought to one side, either the Masseter, Temporal, or Pterigoidæus internus of the opposite side will not only raise the Jaw, but bring it to its middle state. It will be necessary in the description of each Muscle, to give its use in the different situations of the Jaw ; by which means, after they are all described, their compound actions will be better understood. I shall first describe those which raise the Jaw ; then those which give it the lateral motion ; and lastly, those which depress it ; proceeding in each class as they rise in dissection.

The most superficial is the Masseter : it is situated upon the posterior and lower part of the face, between the cheek-bone, and angle of the Lower-Jaw, directly before the lower part of the Ear. It is a thick, short, complex Muscle, and a little flattened : it appears to have two distinct origins, an anterior outer, and a posterior inner ; but that is owing only to its outer edge at its origin being slit, or double ; and the fibres of these two edges having a different course, decussating each other a little. The anterior, and outer portion of the Muscle begin to rise from a small part of the lower edge of the Malar Process of the Maxillary Bone, adjoining to the Os Malæ; and continues its origin all along the lower horizontal edge of this last bone to the angle where its Zygomatic Process turns up, to join that of the Temporal Bone. The external layer of fibres in this portion are tendinous at their beginnings, while the internal are fleshy.

The posterior and inner portion of this Muscle begins to rise partly tendinous, and partly fleshy, from the same lower edge of the Os Malæ; not where the origin of the other portion terminates, but a little farther forwards; and this origin is continued along the lower edge of the Zygomatic Process of the Temporal Bone, as far backwards as the eminence belonging to the articulation of the Lower Jaw.

From this extent of its origin, the Muscle passes downwards to its insertion into the Lower-Jaw. The anterior external portion is broader at its insertion than at its origin; for it occupies a triangular space of the Lower-Jaw above the angle, and on the outside, of about an inch in size to about an inch and a half from the angle towards the Chin. In consequence of this extent of insertion, the fibres of this portion divaricate very considerably. They are mostly fleshy at their insertion, a few only being tendinous, particularly those that are inserted backwards. The posterior and inner portion of the Masseter is narrower at its insertion than at its origin; its posterior fibres running forwards, as well as downwards, while its anterior run almost directly downwards. It occupies in its insertion the remaining part of the scabrous surface, above the angle of the Lower-Jaw, which lies between the anterior portion and the two upper processes, viz. the Condyle and Coronoid. As the anterior fibres of this portion rise on the inside of the posterior fibres of the other portion; and as its posterior fibres run forwards as well as downwards, and its anterior run almost directly downwards, while the fibres of the other portion radiate both forwards and backwards; these two portions in some measure decussate, or cross one another. The anterior fibres, which run farthest and lowest down, are tendinous at their insertion, while the posterior and shortest are fleshy.

The use of the whole Muscle is to raise the Lower-Jaw; and when it is brought forwards, the posterior and inner portion will assist in bringing it a little back; so that this Muscle becomes a rotator, if the Jaw happens to be turned to the opposite side.

We may observe, that this Muscle is intermixed with a number of tendinous portions, both at its origin and its insertion; which give rise to a greater number of fleshy fibres, and thereby add to the strength of the Muscle.

TEMPORALIS.

It is situated on the side of the Head, above, and somewhat before the Ear. It is a pretty broad, flat, and radiated Muscle; broad and thin at its origin; narrow and thick at its insertion; and is covered with a pretty strong Fascia, above the Jugum.

This Fascia is fixed to the bones round the whole circumference of the origin of the Muscle. Above, it is fixed to a smooth white line, that is observable upon the Skull, extending from a little ridge on the lateral part of the Os Frontis, continued across the Parietal Bone, and making a turn towards the Mamillary Process. It is fixed below, to the ridge where the Zygomatic Process begins, just above the Meatus Auditorius; then to the upper edge of the Zygomatic Process itself, and anteriorly to the Os Malæ. This adhesion, anteriorly, above, and posteriorly, gives, as it were, the circumference of the origin of the Temporal Muscle.

This Muscle arises from all the bones of the side of the head, that are within the line, for insertion of the tendinous Fascia, viz. from the lower and lateral part of the Parietal Bone, from all the squammous portion of the Temporal Bone, from the lower and lateral part of the Os Frontis, from all the Temporal Process of the Os Sphenoides, and often from a process at the lower part of this surface, (which portion however, is often common to this Muscle, and the Pterygoidæus externus) and from the posterior surface of the Os Malæ. Outwardly, it rises from the inner surface of the Jugum, and from the whole inner surface of the Fascia above described. At this origin, from the Jugum it is not to be distinguished from the Masseter, being there in fact, one and the same Muscle; and indeed the Masseter is no more than a continuation of the same origin, under the edge of the Jugum; and might properly enough be reckoned the same, both as to its origin and insertion, and in some measure in its use also.

The origin is principally fleshy; and the muscle passes from it, in general, downwards, and a little forwards, converging, and forming a thin middle tendon. After which the muscle runs downwards, on the inside of the Jugum, and is inserted into the Coronoid Process of the Lower-Jaw, on both sides tendinous and fleshy, but principally tendinous. It reaches farther down upon the inside of the Coronoid Process, than upon the outer side, where the insertion is continued as low as the body of the bone.

The posterior and inferior edge of this Muscle passes over the root of the Zygomatic Process of the Temporal Bone, as over a pulley, which confines the action of the Muscle to that of raising the Lower-Jaw, more than if its fibres had passed in a direct course from their origin to their insertion.

The use of the Temporal Muscle, in general, is to raise the Lower-Jaw; and as it passes a little forwards to its insertion, it must bring the Condyle at the same time backwards, and so counteract the Pterygoidæus externus of the opposite side; and if both Muscles act they counteract both the Pterygoidæi, by bringing back the whole of the Jaw.

PTERYGOIDÆUS INTERNUS.

It is situated upon the inside of the Lower-Jaw, opposite to the Masseter, which is upon the outside. It is a strong short Muscle, a little flattened, especially at its insertion. It arises tendinous and fleshy from the whole internal surface of the external Ala of the Sphenoid Bone; from the external surface of the internal Ala, near its bottom; from that process of the Os Palati that makes part of the Fossa Pterygoidæa; likewise from the anterior rounded surface of that process, where it is connected to the Os Maxillare superius. From thence the Muscle passes downwards, a little outwards and backwards, and is inserted tendinous and fleshy into the inside of the Lower-Jaw, from the angle, up almost to the groove for the admission of the Maxillary Nerve, where the surface of the bone is remarkably scabrous.

The use of this muscle is to raise the Lower-Jaw; and from its direction, one would suspect that it would bring the Condyle a little forwards; but this motion is contrary to that of the Lower-Jaw, for it is naturally brought back when raised.

PTERYGOIDÆUS EXTERNUS.

Is situated immediately between the external surface of the external Ala of the Pterygoid Process, and the Condyle of the Lower-Jaw; lying, as it were, horizontally along the basis of the skull. It is somewhat radiated in some bodies; broad at the origin, and small at the insertion; but the greater part of it forms a round, strong, fleshy belly; so that the part that makes it of the radiated kind is thin.

The thick and ordinary portion of it arises tendinous and fleshy, from almost the whole external surface of the external Ala of the Pterygoid Process of the Sphenoid Bone, excepting a little bit of the root at the posterior edge; and towards the lower part, it arises a little from the inner surface of that Ala. The thin portion arises from a ridge of the Sphenoid, that is continued from the process towards the temple, just behind the Foramen Lacerum inferius, which terminates in a little protuberance. This origin is sometimes wanting; and in that case, the Temporal Muscle arises from that protuberance; and very often this origin is common to both. These two origins of this Muscle are sometimes so much separated, as to make it a Biceps.

From these origins the Muscle passes outwards, and a little backwards, converging; that is, the superior fibres passing outwards and backwards, and a little downwards; while the inferior, or larger portion of it passes a little upward.

It is inserted tendinous and fleshy into a depression on the anterior part of the Condyle and Neck of the Lower-Jaw, upon the inside of that ridge, which is continued from the Coronoid Process. Likewise a little portion into the anterior part of the moveable cartilage. A little portion is likewise inserted into the anterior part of the moveable cartilage of the joint.

When this Muscle acts singly it is a rotator; for it brings the Condyle of the Jaw forwards, and likewise the moveable cartilage, which throws the Chin to the opposite side: but if it acts in conjunction with its fellow of the opposite side, instead of being turned to one side, the whole Jaw is brought forwards, and thus these counteract the temporal, &c.

These two Muscles generally act alternately; and when they do so, one acts at the time of depression, the other at the time of elevation; so that these Muscles act, both when the lower Jaw is raised, and when it is depressed: yet they do not assist either in raising or depressing it.

DIGASTRICUS,

It is situated immediately under, and a little upon the inside of the Lower Jaw, and outside of the Fauces, extending from the Mastoid Process to the Chin, nearly along the angle made by the Neck and Chin, or Face. The name of this Muscle expresses its general shape, as it has two fleshy bellies, and of course a middle tendon. Yet some of its anterior belly does not arise from the tendon of the posterior, but from the Fascia which binds it to the Os Hyoides. These two fleshy bellies do not run in the same line, but form an angle, just where the tendon runs into the anterior belly; so that this tendon seems rather to belong to the posterior, which is the thickest and longest.

This Muscle arises from the Sulcus made by the inside of the Mastoid Process, and a ridge upon the Temporal Bone, where it is united with the Os Occipitis. The extent of this origin is about an inch; it is fleshy upon its outer part, viz: that from the Mastoid Process, and tendinous on the inside from the ridge. From its origin it passes forwards, downwards, and a little inwards, much in the direction of the posterior edge of the Mammillary Process; and forms a round tendon first in its centre and upper surface. This tendon passes on in the same direction; and when got near the Os Hyoides, it commonly perforates the anterior end of the Stylo Hyoideus Muscle; and from the lower edge of this tendon, some fibres seem to go off, which degenerate into a kind of Facia, that binds it to the Os Hyoides; and some of it goes across the lower part of the Mylo-Hyoidæus, and joins its fellow on the opposite side; binding the Os Hyoides by a kind of belt. At this part the tendon becomes a little broader, makes a turn upwards, inwards, and forwards, and gives origin to the anterior belly, which passes on in the same direction, to the lower part of the Chin, where it is inserted tendinous and fleshy, into a slight depression on the under, and a little on the posterior part of the Lower Jaw, almost contiguous to its fellow. Besides the attachment of the middle tendon to the Os Hyoides, there is a ligamentous binding, which serves, in some measure, as a pulley. This is more marked in some subjects than in others; and this depends on the strength of the tendinous expansion, which binds the tendon of the Digastricus to the Os Hyoides.

When we say that these parts are attached to the Os Hyoides, we do not mean that they can be traced quite into it, like some other tendons in the body; but the Os Hyoides seems to be the most fixed point of attachment. Very often we find two anterior bellies to each

Muscle; the uncommon one, which is the smallest, does not pass to the Chin, but joins with a similiar portion of the other side, in a middle tendon, which is often fixed to the Os Hyoides. At other times, we find such a portion on one side only; in which case it is commonly fixed to the middle tendon of the Mylo-Hyoidæus.

The use of these Muscles with regard to the Lower-Jaw, is principally to depress it; but according as one acts a little more foreibly than the other, it thereby gives the Jaw a small rotation; and becomes, in that respect, a kind of antagonist to the Pterygoidæus Externus. Besides depressing the Lower-Jaw, when we examine the dead body, they would appear to raise the larynx. But although they have this effect, a proper attention to what happens in the living body, will probably shew, that their principal action is to depress the lower jaw, and that they are the Muscles which are commonly employed for this purpose. Let a finger be placed on the upper part of the Sterno-Mastoidæus Muscle, just behind the posterior edge of the mastoid process, about its middle, touching that edge a little with the finger; then depress the lower jaw; and the posterior head of the digastric will be felt to swell very considerably, and so as to point out the direction of the Muscle. In this there can be no deception; for there is no other muscle in this part that has the same direction; and those who are of opinion that the digastric does not depress the lower jaw, will more readily allow this, when they are told, that we find the same head of the Muscle act in deglutition; but not with a force equal to that which it exerts in depressing the lower jaw.—Further, if the Sterno-Hyoidei, Sterno-Thyroidei, and Costo-Hyoidei, acting at the same time with the Mylo-Hyoidei, and Genio-Hyoidei, assisted in depressing the jaw, the Os Hyoides, and Thyroide Cartilage, would probably be depressed, as the bellies of the Sterno-Hyoidei, and of the other lower muscles, are by much the longest; but on the contrary, we find that the Os Hyoides, with the Theroide Cartilage, is a little raised in the depression of the jaw, which we may suppose to be done by the anterior belly of the digastric: and secondly, if these muscles were to act to bring about this motion of the jaw, these parts would be brought forwards, nearer to the straight line between the chin and sternum, which is not the case in this action; whereas we find it to be the case in deglutition, in which these evidently act. By applying our fingers upon the Genio-Hyoideus, and Mylo-Hyoideus, near the Os Hyoides, between the two anterior bellies of the Digastric, (not near the chin where the action of these two bellies may occasion a mistake,) we find these Muscles quite flaccid; which is not the case in deglutition, nor in speaking, in which they certainly do act; nor do we find the Muscles under the Os Hyoides at all affected, as they are in the motion of the Larynx.

It has been observed, that when we open the mouth, while we keep the Lower Jaw fixed, the forepart of the Head or Face is necessarily raised. Authors have been at a good deal of pains to explain this. Some of them considered the Condyles of the Jaw, as the centre of motion; but if this were the case, that part of the Head, where it articulates with the Spine, and of consequence the whole body, must be depressed, in proportion as the Upper Jaw is raised; which is not true in fact. Others have considered the Condyles of the Occiput as the centre of motion; and they have considered the Extensor Muscles of the Head to be the moving powers. The Muscles which move the Head in this case, are pointed out by two circumstances, which attend all muscular motion; in the first place, all actions of our body have Muscles immediately adapted to them; and secondly, when the mind wills any particular action, its power is applied by instinct to those Muscles only, which are naturally adapted to that motion; and further, the mind being accustomed to see the part move which is naturally the most moveable, attends to its motion in the volition, although it be in that instance fixed, and the other parts of the body move towards it: and although the other parts of the body might be brought towards it by other Muscles, and would be so, if the mind intended that they should come towards it, yet these Muscles are not brought into action. Thus the Flexors of of the Arm commonly move the hand to the body; but if the hand be fixed, the body is moved by the same Muscles to the hand. In this case, however, the mind wills the motion of the hand towards the body, and brings the Flexors into action; whereas if it wished to bring the body towards the hand, the Muscles of the forepart of the body would be put into action, and this would produce the same effect.

To apply this to the Lower-Jaw; when we attempt to open the mouth, while the Lower Jaw is immoveable, we fix our attention upon the very same muscles (whatever they are) which we call into action, when we depress the Lower Jaw; and we find that we act with the very same muscles; for our mind attends to the depressing of the jaw, and not the raising of the face; and under such circumstances the mouth is actually opened. We find then by these means the head is raised; and the idea that we have of this motion, is the same that we have in the common depression of the jaw; and we should not know, except from circumstances, that the Jaw was not really depressed; and we find at this time too, that the extensors of the head are not in action. On the contrary, when the jaw is fixed in the same situation, if we have a mind to raise the head, or upper jaw, which of course must open the mouth, we fix our attention to the muscles that move the head backwards, without having the idea of opening our mouth; and at this time the extensors of the head act. This plainly shows, that the same muscles which depress the jaw, when moveable, must raise the head, when the jaw is kept fixed.

This is a proof, too, that there are no other muscles employed in depressing the lower jaw, than will raise the head under the circumstances mentioned. This will further appear from the structure of the parts; wherein four things are to be considered, viz: the articulation of the jaw; the articulation of the head with the neck; the origin, and the insertion of the digastric muscle.

Suppose the upper jaw to be fixed, and the lower jaw to be moveable on the Condyle: if the Digrastic contracts, its origin and insertion will approach towards one another; in which case it is evident, that the lower jaw will move downwards and backwards. But if the lower jaw be fixed, as in the case supposed, and the Vertebræ be also fixed, the Condyle will move upwards and forwards upon the eminence in the joint, the forepart of the head will be pushed upwards and backwards by the Condyle, and the hind part of the head will be drawn down; so that the whole shall make a kind of circular motion upon the upper Vertebra; and the Digastric muscle pulling the hind part of the head towards the lower jaw, and at the same time pushing up the Condyles against the fore part of the head, acquires, by this mechanism, a very considerable additional power.

OF THE STRUCTURE OF A TOOTH, AND FIRST OF THE ENAMEL.

A tooth is composed of two substances, viz: enamel and bone.—The enamel, called likewise the vitreous, or cortical part, is found only upon the body of the Tooth, and is there laid all around, on the outside of the bony, or internal substance. It is by far the hardest part of our body; insomuch that the hardest and sharpest saw will scarce make an impression upon it, and we are obliged to use a file in dividing or cutting it. When it is broken it appears fibrous or striated; and all the fibres or striæ are directed from the circumference to the centre of the tooth.

This, in some measure, both prevents it from breaking in mastication, as the fibres are disposed in arches, and keeps the tooth from wearing down, as the ends of the fibres are always acting on the food.

The enamel is thickest on the grinding surface, and on the cutting edges, or points of the teeth; and becomes gradually thinner on the sides, as it approaches the neck, where it terminates insensibly, though not equally low, on all sides of the teeth. On the base or grinding surface it is of a pretty equal thickness, and therefore is of the same form with the bony substance which it covers.

It would seem to be an earth united with a portion of animal substance, as it is not reducible to quick lime by fire, till it has first been dissolved in an acid. When a tooth is put into a weak acid, the enamel, to appearance, is not hurt; but on touching it with the fingers, it crumbles down into a white pulp. The enamel of teeth, exposed to any degree of heat, does not turn to lime: it contains animal mucilaginous matter; for when exposed to the fire, it becomes very brittle, cracks, grows black, and separates from the inclosed bony part of the Tooth. It is capable, however, of bearing a greater degree of heat than the bony part, without becoming brittle and black.

This substance has no marks of being vascular, and of having a circulation of fluids: the most subtile injections we can make never reach it; it takes no tinge from feeding with madder, even in the youngest animals; and, as was observed above, when soaked in a gentle acid, there appears no *gristly*, or *fleshy* part, with which the earthy part had been incorporated.

We shall speak of the use and formation of the enamel hereafter, when they will be better understood.

THE BONY PART OF A TOOTH.

The other substance of which a tooth is composed, is bony; but much harder than the most compact part of bones in general. This substance makes the interior part of the body, the neck, and the whole of the root of a tooth. It is a mixture of two substances, viz. calcarious earth and an animal substance, which we might suppose to be organized and vascular. The earth is in very considerable quantity; it remains of the same shape after calcination, so that it is in some measure kept together by cohesion; and it is capable of being extracted by steeping in the muriatic, and some other acids The animal substance, when deprived of the earthy part, by steeping in an acid, is more compact than the same substance in other bones, but still is soft and flexible.

That part of a tooth which is bony, is nearly of the same form as a complete tooth; and thence, when the enamel is removed, it has the same sort of edge, point, or points, as when the enamel remained. We cannot by injection prove that the bony part of a tooth is vascular; but from some circumstances it would appear that it is so; for the fangs of teeth are liable to swellings, seemingly of the spina ventosa kind, like other bones; and they sometimes anchylose with the socket by bony and inflexible continuity, as all other contiguous bones are apt to do. But there may be a deception here, for the swelling may be an original formation, and the anchylosis may be from the pulp that the tooth is formed upon being united with the socket. The following considerations would seem to shew that the teeth are not vascular: first, I never saw them injected in any preparation nor could I ever succeed in any attempt to inject them, either in young or old subjects; and therefore believe that there must have been some fallacy in the cases where they have been said to be injected. Secondly, we are not able to trace any vessels going from the pulp into the substance of the new-formed tooth: and whatever part of a tooth is formed, it is always completely formed, which is not the case with other bones. But what is a more convincing proof, is reasoning from the analogy between them and other bones, when the animal has been fed with madder. Take a young animal, viz. a pig, and feed it with madder, for three or four weeks; then kill the the animal, and upon examination you will find the following appearance: first, if this animal had some parts of its teeth formed before the feeding with madder, those parts will be known by their remaining of this natural colour; but such parts of the teeth as were formed while the animal was taking the madder, will be found to be of a red colour. This shews that it is only those parts that were forming while the animal was taking the madder that are dyed; for what were already formed will not be found in the least tinged. This is different in all other bones; for we know that any part of a bone which is already formed, is capable of being dyed with madder, though not so fast as the part that is forming; therefore as we know that all other bones when formed are vascular, and are thence susceptible of the dye, we may readily suppose that the teeth are not vascular, because they are not susceptible of it after being once formed. But we shall carry this still farther; if you feed a pig with madder, for some time, and then leave it off for a considerable time before you kill the animal, you will find the above appearances still subsisting, with this addition, that all the parts of the teeth which were formed after leaving off feeding with the madder will be white. Here then in some teeth we shall have white, then red, and then white again; and so we shall have the red and the white colour alternately through the whole tooth.(A)

Note (A.) Many Dentists, and among them, some of the best educated of the profession, have adopted the opinion of Mr. Hunter, and carried it out in their practice—that the teeth are inorganic bodies:—and perhaps there is no subject connected with the healing art on which many practitioners are more grossly ignorant than of the delicate sensibilities of the human teeth, and of their intimate connexion with other parts. With a subject on which so much depends in relation to individual success in dental practice, and where such good or evil consequences result to our patrons and friends, one would at once suppose that every dentist would be familiar. But unfortunately, this is not the case; and for the want of this knowledge, the teeth, so essential to our health and happiness when in a sound condition, and so productive of suffering and inconvenience when diseased or lost, are abused and mal-treated by far the greater number of those who are engaged in the profession, and call themselves dentists.

As the organization of the teeth is a subject on which the profession are not generally agreed, I think there cannot be a better time or place than the present to adduce a few facts, which I hope will lead to a more careful and thorough investigation of the subject, and thereby correct the evils that have been so long and so severely felt.

In consequence of the high repute of that great man, and accurate observer, John Hunter, his work on the teeth has long been, and still is, to a great extent, a kind of text book and guide to many who are pursuing this branch of chirurgical science; and although his researches enabled him to strike out a vast field of usefulness, and in some measure, laid the foundation for a new and useful profession; yet I think, I may safely say, that his erroneous views in relation to the organic structure of the teeth, have, in a great degree, retarded the advancement of that profession which his labours did so much to distinguish. His opinions have produced this effect, by leading to a course of practice entirely mechanical upon the the teeth which he considered as bodies deprived almost entirely of organic life and its dependencies, instead of regarding them as they really are, as highly sensitive, living and perfectly organized structures, requiring the most careful and judicious management, and nicest surgical skill in the promotion of their just arrangement, and in the treatment of their diseases.

On the 58th page of Mr. Hunter's work, and the 24th of the republication, will be found his reasons for not believing the teeth to be vascular. First, that he never saw them injected in any preparation and could never succeed in injecting them either in young or old subjects; and therefore he believes there must have been some fallacy in those cases where they are said to have been injected.

This experiment shews, that the tooth once tinged, does not lose its colour; now as all other bones that have been once tinged lose their colour in time, when the animal leaves off feeding with madder

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Dr. Kimball,* in his very able and perspicuous dissertation on the teeth, when speaking on this subject, has the following remarks :—"Admitting however, that they have not been and cannot be injected, yet surely this cannot be sufficient evidence for believing them to be destitute of vascularity, for neither can tendons or cartilages be injected, and yet the organization of them is, I believe, doubted by no one.

"It is believed that this fact entirely does away the force of the objection, but even if it does not, it would by no means follow that because vessels have not been injected, therefore there are none to be injected."

Another strong proof of their organization is their hereditary character which is as decidedly marked as are Phthisis, Scrofula or Gout ; and children resemble their parents as often in dental peculiarities as in feature or any other attribute. A remarkable instance of this is related by Mr. Brown, in the first number of this Journal. The specimen in the possession of Mr. Baker, an account of which is given in the same number, is more conclusive than all the arguments that language could bring together, that the teeth, to a great degree, possess the active and living principle peculiar to organic life. This is probably the most remarkable specimen of the kind in the world, and by it, nature herself has proved to complete and perfect demonstration, what the learning and science of both the old and the new world have failed so decidedly to establish.

As it will be in the power of but few to examine this specimen for themselves, I will adduce other testimony which will enable those who are doubting to make similar examinations for the purpose of satisfying themselves.

Mr. Thomas Bell in his late, invaluable work, says :—"I have, in many cases, on breaking a tooth immediately after extraction, where the pain and inflammation have been severe, found distinct red patches in the very substance of the bone." In speaking of the difficulty of injecting the teeth, he says ;—"But what art has failed to effect, nature or rather disease has done for us. I have in my possession a set of teeth from the head of a young woman who died of jaundice, every one of which is tinged with a bright yellow colour." "I have," continues Mr Bell, "frequently examined the teeth of persons, whose death has been occasioned by hanging or drowning, and have invariably found the osseous parts coloured with a dark, dull red, which could not possibly have been the case if these structures had been devoid of a vascular system. In both instances the enamel remains wholly free from discoloration."

Dr. Fitch, of Philadelphia, gives the following testimony :—"I have at this time five teeth, taken from the jaws of a very plethorick woman, aged 27 years, who died of a very violent inflammatory fever, which apppear to be completely and beautifully injected with red blood. Their enamel is perfectly natural, whilst the bony structure is of a deep red."

Dr. Kimball speaks of having "examined minutely with Dr. Flagg, a tooth that had been filled, when in the bottom of the cavity there was a space left open which had been completely filled with new bone." Numerous instances could be adduced of a similar kind, but as it is earnestly hoped that some of our professional brethren will in some subsequent number furnish an article where these matters can be discussed at greater length, and wherein the diseases to which the teeth are liable, such as *necrosis*, *exostosis*, *mollities ossium*, and the numerous forms of decay observable in them, may be alleged in proof of their organization.

*It is with deep regret that I here take occasion to say that Dr. Kimball, so highly and so well qualified for usefulness, has been compelled, on account of ill health to abandon his profession ;—but it gives me pleasure to add, that in retiring from a practice in which he was eminently successful, he has taken with him the grateful remembrances of his friends and patrons, and the respect and esteem of all who were engaged in the same field of labor with him.

(though very slowly,) and as that dye must be taken into the constitution by the absorbents, it would seem that the teeth are without absorbents, as well as other vessels.(B)

This shews that the growth of the teeth is very different from that of other bones. Bones begin at a point, and shoot out at their surface; and the part that seems already formed, is not in reality so, for it is forming every day by having new matter thrown into it, till the whole substance is complete; and even then it is constantly changing its matter.

Another circumstance in which teeth seem different from bone, and a strong circumstance in support of their having no circulation in them, is that they never change by age, and seem never to undergo any alteration, when completely formed, but by abrasion; they do not grow softer, like the other bones, as we find in some cases, where the whole earthy matter of the bones has been taken into the constitution.

From these experiments it would appear, that the teeth are to be considered as extraneous bodies, with respect to a circulation through their substance; but they have most eertainly a living principle, by which means they make part of the body, and are capable of uniting with any part of a living body; as will be explained hereafter: and it is to be observed, that affections of the whole body have less influence upon the teeth than any other part of the body. Thus in children affected with the rickets, the teeth grow equally well as in health though all the other bones are much affected; and hence their teeth being of a larger size in proportion to the other parts, their mouths are protuberant.

OF THE CAVITY OF THE TEETH.

Every tooth has an internal cavity, which extends nearly the whole length of its bony part. It opens, or begins at the point of the fang, where it is small; but in its passage becomes larger, and ends in the body of the tooth. This end is exactly of the shape of the body of the tooth to which it belongs. In general it may be said, that the whole of the cavity is nearly of the shape of the tooth itself, larger

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Note (B.) In relation to the teeth being supplied with absorbents, we have the following convincing fact from the work of Mr. Bell before quoted:—He says—"This subject does not rest upon doubtful experiment. A case which occurred to me some years since, the preparation of which is now in my possession, appears to me satisfactorily to prove the presence of absorbents in the teeth; it was, in fact, an instance of true abscess in the bone of a tooth. Inflammation had existed for a considerable time, and after extraction, upon sawing the tooth through for the purpose of ascertaining the state of the internal structure, as no diseased appearances were found on the external surface, or any other part of the tooth, I found a cavity formed in the very substance of the tooth, communicating with the natural cavity, and filled with *pus*." No one will pretend to argue that this cavity could have been formed without the agency of the absorbents; and how could *pus* have been formed without the agency of the secreting vessels? the existence of both of which is proved by this case.

in the body of the tooth, and thence gradually smaller to the extremity of the fang; simple, where the tooth has but one root; and in the same manner compounded, when the tooth has two or more fangs.

This cavity is not cellular, but smooth in its surface; it contains no marrow, but appears to be filled with blood-vessels, and I suppose, nerves, united by a pulpy or cellular substance. The vessels are branches of the superior and inferior maxillaries; and the nerves must come from the second and third branches of the fifth pair.

By injections we can trace the blood-vessels distinctly through the whole cavity of the tooth; but I could never trace the nerves distinctly even to the beginning of the cavity.(c)

OF THE PERIOSTEUM OF THE TEETH.

The teeth as we observed, are covered by an enamel only at their bodies; but at their fangs they have a Periosteum, which, though very thin, is vascular, and appears to be common to the tooth which it incloses, and the socket which it lines as an investing internal membrane. It covers the tooth a little beyond the bony socket, and is there attached to the gum.

OF THE SITUATION OF THE TEETH.

The general shape and situation of the teeth are obvious. The opposition of those of the two jaws, and the circle which each row describes, need not be particularly explained, as they may be very well seen in the living body, and may be supposed to be already understood, from what was said of the alveolar processes.

We may just observe, with regard to the situation of the two rows, that when they are in the most natural state of contact, the teeth of the upper jaw project a little beyond the lower teeth, even at the sides of the jaws; but still more remarkable at the fore part, where in most people the upper teeth lie before those of the lower jaw; and at the lateral part of each row, the line, or surface of contact, is hollow from behind forwards, in the lower jaw; and in the same proportion it is convex in the upper jaw.

The edge of each row is single at the forepart of the jaws; but as the teeth grow thicker backwards, it there splits into an internal and external edge. The canine tooth, which we shall call *Cuspidatus*, is the point from which the two edges go off; so that the first grinder,

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Note (c.) Although Mr. Hunter was not able to discover the nerves entering the cavity of a tooth, yet every practical man is certain of their existence, which can be as clearly proved as that there are blood vessels and absorbents. If those gentlemen who maintain the opposite theory to that which we advocate, had been practically acquainted with the diseased and healthy condition of the bony structure of the teeth, it is believed that a theory which so directly tends to substitute in the place of surgical treatment founded upon scientific principles, mere mechanical manipulation, would not have had the support of the justly celebrated Hunter, nor in more modern times, the countenance of Blainville and Lawrence, or what we shall call the first *Bicuspis*, is the first tooth that has a double edge.

OF THE NUMBER OF TEETH.

Their number in the whole, at full maturity, is from twenty-eight to thirty-two: I once saw twenty-seven only, never more than thirty-two. Fourteen of them are placed in each jaw, when the whole number is no more than twenty eight; and sixteen, when there are thirty-two. If the whole be twenty-nine or thirty-one in number, the upper jaw sometimes, and sometimes the lower has one more than the other; and when the number is thirty, I find them sometimes divided equally between the two jaws; and in other subjects sixteen of them are in one jaw, and fourteen in the other. In speaking of the number of teeth, I am supposing that none of them have been pulled out, or otherwise lost; but that there are from eight to twelve of those large posterior teeth, which I call grinders, and that they are so close planted as to make a continuity in the circle; and in this case, when the number is less than thirty-two, the deficiency is in the last grinder.

The teeth differ very much in figure from one another; but those on the right side in each jaw resemble exactly those on the left, so as to be in pairs; and the pairs belonging to the upper jaw nearly resemble the corresponding teeth of the lower jaw in situation, figure, and use.

Each tooth is divided into two parts, viz: first, the body, or that part of it which is the thickest, and stands bare beyond the Alveoli and gums; secondly, the fang, or root which is lodged within the gum and Alveolar Process: and the boundary between these two parts, which is grasped by the edge of the gum, is called the neck of a tooth. The bodies of the different teeth differ very much in shape and size, and so do their roots. The difference must be considered hereafter.

The teeth of each jaw are commonly divided into three classes, viz: *Incisors*, *Canine*, and *Grinders;* but from considering some circumstances of their form, growth and use, I choose to divide them into the four following classes, viz: *Incisores*, commonly called Fore Teeth; *Cuspidati*, vulgarly called *Canine; Bicuspides*, or the two first Grinders; and *Molares* or the three last Teeth. The number of each class, in each jaw, for the most part, is four *Incisores*, two *Cuspidati*, four *Bicuspides*, and four, five, or six *Molares*.

There is a regular gradation, both in growth and form through these classes, from the *Incisores* to the *Molares*, in which respect the *Cuspidati* are of a middle nature, between the *Incisores* and *Bicuspides*, as the last are between the *Cuspidati* and *Molares;* and thence the *Incisores* and *Molares* are the most unlike in every circumstance,

OF THE INCISORES.

The *Incisores* are situated in the anterior part of the jaw; the others more backwards on each side, in the order in which we have named them. The bodies of the *Incisores* are broad, having two flat surfaces, one anterior, the other posterior. These surfaces meet in a sharp cutting edge. The anterior surface is convex in every direction, and placed almost perpendicularly; and the posterior is concave and sloping, so that the cutting edge is almost directly over the anterior surface.

These surfaces are broadest and the tooth is thinnest at the cutting edge, or end of the tooth, and thence they become gradually narrower and the tooth thicker towards the neck, where the surfaces are continued to the narrowest side or edge of the fang. The body of an *Incisor*, in a side-view, grows gradually thicker, or broader from the edge or end of the tooth to its neck; and these coincide with the flat or broad side of the fang; so that when we look on the fore part, or on the back part of an *Incisor*, we observe it grows constantly narrower from its cutting edge to the extremity of its fang. But in a side-view it is thickest or broadest at its neck; and thence becomes gradually more narrow, both to its cutting edge, and to the point of its fang.

The Enamel is continued farther down, and is thicker on the anterior and back part of the *Incisores* than on their sides, and is even a little thicker on the fore part than upon the back part of the tooth. If we view them latterally, either when entire, or when cut down through the middle, but especially in the latter case, it would seem as if the fang was driven like a wedge into, and had split the body or enamel of the tooth. They stand almost perpendicularly, their bodies being turned a little forwards. Their fangs are much shorter than those of the *Cuspidati*, but pretty much of the same length with all the other teeth of this jaw.

In the upper jaw they are broader and thicker, especially the two first: their length is nearly the same with those of the lower jaw. They stand a little obliquely, with their bodies turned much more forwards (the first especially) and they generally fall over those of the under jaw.

The two first *Incisores* cover the two first, and half of the second of the lower jaw, so that the second *Incisor* in the upper jaw covers more than half of the second, and more than the half of the *Cuspidatus* of the under jaw.

The edges of the *Incisores* by use and friction, in some people, become blunt and thicker; and in others they sharpen one another, and become thinner.

OF THE CUSPIDATUS.

The *Cuspidatus* is the next after the *Incisores* in each jaw; so that there are four of them in all. They are in general thicker than the *Incisores*, and considerably the longest of all the teeth.

The shape of the body of the *Cuspidatus* may be very well conceived, by supposing an *Incisor*, with its corners rubbed off, so as to end in a narrow point, instead of a thin edge; and the fang differs from that of an *Incisor*, only in being much larger.

The outside of the body of a *Cuspidatus* projects most at the side next the *Incisores*, being there more angular than any where else.

The enamel covers more of the larteral parts of these teeth than of the *Incisores;* they stand perpendicularly, or nearly so, projecting farther out in the circle than the others, so that the two *Cuspidati* and the four *Incisores* often stand almost in a straight line, especially in the lower jaw.

This takes place only in adults, and in them only when the second teeth are rather too large for the arch of the jaw; for we never find this when the teeth are at any distance from one another, or in young subjects. Their points commonly project beyond the horizontal line formed by the row of teeth, and their fangs run deeper into the jaws, and are oftener a little bent.

In the upper jaw they are rather longer, and do not project much beyond the circle of the adjacent teeth; and in this jaw they are not placed vertically, their bodies being turned a little forwards and outwards.

When the jaws are closed, the *Cuspidatus* of the upper jaw falls between, and projects a little over the *Cuspidatus* and first *Bicuspis* of the lower jaw. When they are a little worn down by use, they commonly first take an edge somewhat like a worn *Incisor*, and afterwards become rounder.

The use of the *Cuspidati* would seem to be, to lay hold of substances, perhaps even living animals; they are not formed for dividing as the *Incisores* are; nor are they fit for grinding. We may trace in these teeth a similarity in shape, situation, and use, from the most imperfectly carnivorous animal, which we believe to be the human species, to the most perfectly cornivorous, viz: the lion.

OF THE BICUSPIDES.

Immediately behind the *Cuspidati*, in each jaw, stand two teeth, commonly called the first and second grinders, but which, for reasons hinted at above, I shall suppose to constitute a particular class, and call them *Bicuspides.*

These (viz: the fourth and fifth tooth from the symphisis of the jaw) resemble each other so nearly, that a description of the first will serve for both. The first indeed is frequently the smallest, and has rather the longest fang, having somewhat more of the shape of the *Cuspidatus* than the second.

The body of this Tooth is flattened latterally, answering to the flat side of the fang. It terminates in two points, viz: one external and one internal. The external is the longest and thickest; so that on looking into the mouth from without, this point only can be seen, and the tooth has very much the appearance of a *Cuspidatus;* especially the first of these teeth. The internal point is the least, and indeed sometimes so very small, that the tooth has the greatest resemblance to a *Cuspidatus* in any view. At the union of the points the tooth is thickest, and thence it loses in thickness, from side to side, to the extremity of the fang; so that the fang continues pretty broad to the point, and is often forked there. All the teeth hitherto described often have their points bent, and more particularly the *Cuspidati.*

The enamel passes somewhat farther down externally and upon the inside, then latterally; but this difference is not so considerable as in the *Incisores*, and *Cuspidati;* in some indeed it terminates equally all round the tooth. They stand almost perpendicularly, but seem to be a little turned inwards, especially the last of them.

In the upper jaw they are rather thicker than in the lower, and are turned a very little forwards and outwards. The first in the upper jaw falls between the two in the lower. The second falls between the second and the first grinder; and both project over those of the lower jaw, but less than the *Incisores* and *Cuspidati.*

The *Bicuspides*, and especially the second of them, in both jaws, are oftener naturally wanting than any of the teeth, except the *Dentes Sapientiæ;* thence we might conjecture that they are less useful; and this conjecture appears less improbable, when we consider, that in their use they are of a middle nature between cutters and grinders; and that in most animals, so far as I have observed, there is a vacant space between the cutters and grinders. I have also seen a jaw in which the first *Bicuspis* was of the same shape and size as a grinder, and projected, for want of room, between the *Cuspidatus* and second *Bicuspis*. These and the grinders alter very little in shape on their grinding surfaces by use; their points only wear down, and become obtuse.

OF THE GRINDERS.

In describing the grinders we shall first consider the first and second conjunctly, because they are nearly the same in every particular; and then give an account of the third or last grinder, which differs from them in some circumstances.

The two first grinders differ from the *Bicuspides*, principally in being much larger, and in having more points upon their body, and more fangs.

The body forms almost a square, with rounded angles. The grinding surface has commonly five points, or protuberances, two of which are on the inner, and three on the outer part of the tooth; and generally some smaller points at the roots of these larger protuberances. These protuberances make an irregular cavity in the middle of the tooth. The three outer points do not stand so near the outer edge of the tooth, as the inner do on the inside; so that the body of the tooth swells out more from the points, or is more convex on the outside. The body towards its neck becomes but very little smaller, and there divides into two flat fangs, one forwards, the other backwards, with their edges turned outwards and inwards, and their sides consequently forwards and backwards; the fangs are but very little narrower at their ends, which are pretty broad, and are often bifurcated. There are two cavities in each fang, one towards each edge, leading to the general cavity in the body of the tooth. These two cavities are formed by the meeting of the sides of the fang in the middle, thereby dividing the broad and flat cavity into two; and all along the outside of these (and all the other flat fangs) there is a corresponding longitudinal groove. These fangs at their middle, are generally bent a little backwards.

The enamel covers the bodies of these teeth pretty equally all round.

The first grinder is somewhat larger and stronger than the second; it is turned a little more inwards than the adjacent *Bicuspides*, but not so much as the second grinder. Both of them have generally shorter fangs than the *Bicuspides.*

There is greater difference between these grinders in the upper and lower jaw, than any of the other teeth. In the upper jaw they are rather rhomboidal, than square in their body, with one sharp angle turned forwards and outwards, the other backwards and inwards; besides they have three fangs, which diverge, and terminate each in a point; these are almost round, and have but one cavity. Two of them are placed near each other perpendicularly, over the outside of the tooth; and the other, which generally is the largest, stands at a greater distance on the inside of the tooth, slanting inwards. In this jaw these two grinders are inclined outwards, and a little forwards; they project a little over the corresponding teeth of the lower jaw, and they are placed further back in the mouth, so that each is partly opposed to two of the lower jaw. The second in the upper jaw is smaller than the others, and the first and second are placed directly under the maxillary sinus. I once saw the second grinder naturally wanting on one side of the lower jaw.

The third grinder is commonly called *Dens Sapientiæ;* it is a little shorter and smaller than the others, and inclined a little more inwards and forwards. Its body is nearly of the same figure, but rather rounder, and its fangs are generally not so regular and distinct, for they often appear squeezed together; and sometimes there is only one fang, which makes the tooth conical; it is much smaller than the rest of the grinders In the upper jaw this tooth has more variety than in the lower, and is even smaller than the corresponding tooth of the lower, and thence stands directly opposed to it; but for this circumstance the grinders would reach farther back in the upper jaw than in the lower, which is not commonly the case.

In the upper jaw this third grinder is turned but a very little outwards; is frequently inclined somewhat backwards; and it projects over that of the under jaw. It oftener becomes loose than any of the other teeth.

They are placed under the posterior part of the maxillary sinus, and there the parts which compose the sinus are thicker than in the middle. The variations as to the natural number of the teeth, depend commonly upon these *Dentes Sapientiæ.*

Thus from the *Incisores* to the first grinder, the teeth become gradually thicker at the extremity of their bodies, and smaller from the first grinder to the *Dens Sapientiæ*. From the *Cuspidatus* to the *Dens Sapientiæ*, the fangs become much shorter; the *Incisores* are nearly of the same length with the *Bicuspides*. From the first *Incisor* to the last grinder, the teeth stand less out from the sockets and gums.

The bodies of the teeth in the lower jaw are turned a little outwards at the anterior part of the jaw, and thence to the third grinder, they are inclined gradually more inwards. The teeth in the upper jaw project over those of the under, especially at the fore part, which is owing to the greater obliquity of the teeth in the upper jaw; for the circle of the sockets is nearly the same in both jaws. This oblique situation, however, becomes gradually less, from the *Incisores* backwards, to the last grinder, which makes them gradually project less in the same proportion.

The teeth in the upper jaw are placed farther back in the circle than the corresponding teeth of the lower; this is owing to the two first *Incisores* above being broader than the corresponding *Incisores* below. All the teeth have only one fang, except the grinders, each of which has two in the lower jaw, and three in the upper.

The fangs bear a proportion to the bodies of the teeth; and the reason is evident, for otherwise they would have been easily broken, or pushed out of their sockets. The force commonly applied to them is oblique, not perpendicular; and they are not so firmly fixed in the upper jaw, that is, the alveolar process in that is not so strong as in the under jaw: it is, herhaps, on this account, that the grinders in that jaw have three fangs.

This particular structure in the alveolar process of the upper jaw, is, perhaps, to give more room for the *Antrum Highmorianum;* on this supposition the fangs must be made accordingly, *i. e.* so that they shall not be pushed into that cavity; now, by their diverging, they inclose, as it were, the bottom of the *Antrum*, and do not push against its middle, which is the weakest part; and the points of three diverging fangs will make a greater resistance (or not be so easily pushed in) than if they were placed parallel. If there had been only two, as in the lower jaw, they must have been placed opposite to the thinnest part of the *Antrum;* and three points placed in any direction but a diverging one, would have had here much the same effect as two; and as the force applied is endeavouring to depress the tooth, and push it inwards, the innermost fang diverges most, and is supported by the inner wall of the *Antrum*. That all this weakness in the upper jaw is for the increase of the *Antrum* is probable, because all the teeth in the upper jaw are a good deal similar to those in the lower, excepting those that are opposite to the maxillary sinus; and here they differ principally in the fangs, without any other apparent reason; and what confirms this, is, that the *Dentes Sapientiæ* in both jaws are more alike than the other grinders; for this reason, as I apprehend, because the *Dens Sapientiæ* in the upper jaw, does not interfere so much with the maxillary sinus.

What makes it still more probable that the two first superior grinders have three fangs on account of the maxillary sinus, is, that the two grinders on each side of the upper jaw, in the child, have three fangs, and we find them underneath the *Antrum;* but those that succeed them have only one fang, as in the lower jaw; but by that time the *Antrum* has passed further back, or rather the arch of the jaw has projected, or shot forwards, as it were, from under the *Antra*, so that the alveolar processes that were under the *Antrum* at one age, are got before it in another.

That the edge of every fang is turned towards the circumference of the jaw, in order to counteract the acting power, we shall see when we consider the motion of the jaw, and the use of the teeth.

OF THE ARTICULATION OF THE TEETH.

The fangs of the teeth are fixed in the gum and alveolar processes by that species of articulation called Gomphosis, which, in some measure, resembles a nail driven into a piece of wood.

They are not, however, firmly united with the processes, for every tooth has some degree of motion; and in heads which have been boiled or macerated in water, so as to destroy the periosteum and adhesion of the teeth, we find the teeth so loosely connected with their sockets, that all of them are ready to drop out, except the grinders, which remain as it were hooked from the number and shape of their fangs.

OF THE GUMS.

The alveolar processes are covered by a red vascular substance, called the gums, which has as many perforations as there are teeth; and the neck of a tooth is covered by, and fixed to this gum. Thence there are fleshy partitions between the teeth, passing between the external and internal gum, and as it were, uniting them; these partitions are higher than the other parts of the gum, and thence form an arch between every two adjacent teeth. The thickness of that part which projects beyond the sockets is considerable; so that when the gum is corroded by disease, by boiling, or otherwise, the teeth appear longer, or less sunk into the jaw. The gum adheres very firmly in a healthful state both to the alveolar process and to the teeth, but its extreme border is naturally loose all around the teeth. The gum, in substance, has something of a cartilaginous hardness and elasticity, and is very vascular, but seems not to have any great degree of sensibility; for though we often wound it in eating, and in picking our teeth, yet we do not feel much pain upon these occasions; and both in infants and old people, where there are no teeth, the gums bear a very considerable pressure, without pain.

The advantage arising from this degree of insensibility in the gums is obvious, for till the child cuts its teeth, the gums are to do the business of the teeth, and are therefore formed for this purpose, having a hard ridge running through their whole length. Old people, who have lost their teeth, have not this ridge. When in a sound state, the gums are not easily irritated by being wounded, and therefore are not so liable to inflammation as other parts, and soon heal.

The teeth being united to the jaw by the periosteum and gum, have some degree of a yielding motion in the living body. This circumstance renders them more secure; it breaks the jar of bony contact, and prevents fractures both of the sockets and of the teeth themselves.

OF THE ACTION OF THE TEETH, ARISING FROM THE MOTION OF THE LOWER JAW.

The lower jaw may be said to be the only one that has any motion in mastication; for the upper jaw can only move with the other parts of the head. That the upper jaw and head should be raised in the common act of opening the mouth, or chewing, would seem, at first sight, improbable; and from an attentive view of the mechanism of the joints and muscles of those parts, from experiment and observation, we find that they do not sensibly move. We shall only mention one experiment in proof of this, which seems conclusive; let a man place himself near some fixed point, and look over it, to another distant and immoveable object, when he is eating. If his head should rise in the least degree, he would see more of the distant object over the nearest fixed point, which in fact he does not. The nearer the fixed point is, and the more distant the object, the experiment will be more accurate and convincing. The result of the experiment will be the same, if the nearest point has the same motion with the head; as, when he looks from under the edge of a hat, or any thing else put upon his head, at some distant fixed object. We may conclude then, that the motion is entirely in the lower jaw: and, as we have already described both the articulation and the motion of the bone, we shall now explain the action of mastication, and, at the same time, consider the use of each class of teeth.

With regard to the action of the teeth of both jaws, in mastication, we may observe, once for all, that their action and re-action must be always equal, and that the teeth of the upper and lower jaws are complete, and equal antagonists both in cutting and grinding.

When the lower jaw is depressed, the condyles slide forwards on the eminences; and they return back again into the cavities, when the jaw is completely raised.

This simple action produces a grinding motion of the lower jaw, backwards on the upper, and is used when we divide any thing with our fore teeth, or *Incisores*. For this purpose, the *Incisores* are well formed; as they are higher than the others, their edges must come in contact sooner; and as the upper project over the under, we find in dividing any substance with them, that we first bring them opposite to one another, and as they pass through the part to be divided, the lower jaw is brought back, while the incisors of that jaw slide up behind those of the upper jaw, and of course pass by one another. In this way they complete the division, like a pair of scissors; and at the same time they sharpen one another. There are exceptions to this; for these teeth in some people meet equally, viz; in those people whose fore-teeth do not project further from the gum, or socket, than the back teeth; and such teeth are not so fit for dividing; and in some people the teeth of the lower jaw are so placed, as to come before those of the upper jaw; this situation is as favourable for cutting as when the overlapping of the teeth is the reverse, except for this circumstance, that the lower jaw must be longer, and therefore its action weaker.

The other motion of the lawer jaw, viz: when the lateral teeth are used, is somewhat different from the former. In opening the mouth, one Condyle slides a little forwards, and the other slides a little further back into its cavity; this throws the jaw a little to that side, just enough to bring the lower teeth directly under their corresponding teeth in the upper jaw: this is done, either in diving, or holding of substances; and these are the teeth that are generally used in the last mentioned action. When the true grinding motion is to be performed, a greater degree of this last motion takes place; that is, the condyle of the opposite side is brought further forwards, and the condyle of the same side is drawn farther back into the cavity of the temporal bone, and the jaw is a little depressed. This is only preparatory for the effect to be produced; for the moving back of the first mentioned condyle into the socket is what produces the effect in mastication.

The lateral teeth in both jaws are adapted to this oblique motion; in the lower they are turned a little inwards, that they may act more in the direction of their axis; and here the alveolar process is strongest upon the outside, being there supported by the ridge at the root of the coronoid process. In the upper jaw, the obliquity of the teeth is the reverse, that is, they are turned outwards, for the same reason; and the longest fang of the grinders is upon the inside, where the socket is strengthened by the bony partition between the antrum and nose. Hence it is, that the teeth of the lower jaw have their outer edges worn down first; and, vice versa, in the upper jaw.

GENERAL COMPARISONS BETWEEN THE MOTION OF THE JAW IN YOUNG AND OLD PEOPLE.

In Children who have not yet teeth, there does not seem to be a sliding motion in the lower jaw. The articular eminence of the temporal bone is not yet formed, and the cavity is not larger than the condyle; therefore the centre of motion in such, must be in the condyle. In old people who have lost their teeth, the centre of motion appears to be in the condyles, and the motion of their jaw to be only depression and elevation. They never depress the jaw sufficiently to bring the condyle forwards on the eminence, because, in them the mouth is sufficiently opened when the jaw is in its natural position.

Hence it is, that in old people, the gums of the two jaws do not meet in the fore-part of the mouth, and they cannot bite at that part so well, as at the side of the jaw; and instead of the grinding motion which would be useless, where there are no grinders; they bruise their food rather by a simple motion of the jaw upwards and downwards.

It is from the want of teeth in both those ages, that the face is shorter in proportion to its breadth. In an old person, after the teeth are gone, the face is shorter, while the mouth is shut, by almost the whole lengths of the teeth in both jaws; that is, about an inch and a half.

From the want of teeth too, at both those ages, the cavity of the mouth is then smaller; and the tongue seems too large and unmanageable, more especially in old people. In these last we observe also, that the chin projects forwards, in proportion as the mouth is shut; because the basis of the lower jaw (which is all that now remains) describes a wider circle than the alveolar process in younger people. The jaws do not project so much forwards in a child, as in an adult; hence the face is flatter, especially at the lower part. In proportion as the last grinders are produced, the sides of the curve formed by the jaws become longer, and push forward the fore-part, none of the additional part passing backwards. The fore-part also continues nearly of the same size, so that the whole jaw is longer in proportion to its breadth, and projects farther forwards.

OF THE FORMATION OF THE ALVEOLAR PROCESS.

Having considered the alveolar processes in their adult, or perfect state, we shall next examine and trace them from their beginning.

We observe the beginning of the alveolar process at a very early period. In a fœtus of three or four months it is only a longitudinal groove, deeper and narrower forwards, and becoming gradually more shallow and wider backwards: instead of bony partitions, dividing that groove into a number of sockets, there are only slight ridges across the bottom and sides, with intermediate depressions, which mark the future *Alveoli.*

In the lower jaw the vessels and nerves run along the bottom of this alveolar cavity, in a slight groove, which afterwards becomes a complete and distinct bony canal.

The alveolar process grows with the teeth, and for some time keeps the start of them. The ridges which are to make the partitions shoot from the sides across the canal, at the mouth of the cell, forming hollow arches: this change happens first at the anterior parts of the jaws. As each cell becomes deeper, its mouth also grows narrower and at length is almost, but not quite, closed over the contained tooth.

The disposition for contracting the mouth of the cell, is chiefly in the outer plate of the bone, which occasions the contracted orifices of the cells to be nearear the inner edge of the jaw. The reason, perhaps, why the bone shoots over, and almost covers the tooth, is that the gum may be firmly supported before the teeth have come through.

The *Alveoli* which belong to the adult grinders, are formed in another manner; in the lower jaw they would seem to be the remains of the root of the coronoid process; for the cells are formed for those teeth in the root of that process; and in proportion as the body of the bone, and the cells already formed, push forwards from under that process, the succeeding cells and their teeth are formed, and pushed forward in the same manner.

In the upper jaw there are cells formed in the tubercles for the young grinders, which at first are very shallow, and become deeper and deeper as the teeth grow; and they grow somewhat faster, so as almost to inclose the whole tooth before it is ready to push its way through that inclosure and gum. There is a succession of these, till the whole three grinders are formed.

OF THE FORMATION OF THE TEETH OF THE FŒTUS.

The depression, or first rudiments of the *Alveoli* observable in a fœtus of three or four months, is filled with four or five little pulpy substances, which are not very distinct at this age. About the fifth month both the processes themselves and the pulpy substances become more distinct: the anterior of which are the most complete. About this age too, the ossifications begin on the edge of the first *Incisores*. The *Cuspidati* are not in the same circular line with the rest, but somewhat on the outside, making a projection there at this age, there not being sufficient room for them.

In the sixth, or seventh month, the edges, or tips, of all these five substances are begun to ossify, and the first of them is a little advanced; and besides these, the pulp of the sixth tooth has begun to be formed; it is situated in the tubercle of the upper jaw, and under and on the inside of the coronoid process in the lower jaw; so that at this age, in both jaws, there are in all twenty teeth begun to ossify, and the *stamina* of twenty-four. They may be divided into the *Incisores*, *Cuspidati*, and *Molares;* for at this age there are no *Bicuspides*, the two last teeth in each side of both jaws having all the characteristics, and answering all the purposes of the true *Molares* in the adult though when these first *Molares* fall out, their places are taken by the *Bicuspides*.

The teeth gradually advance in their ossification, and about the seventh, eighth, or ninth month after birth, the *Incisores* begin to cut or pass through the gums; first, generally, in the lower jaw. Before this time the ossifications in the third grinder, or that which makes the first in the adult, are begun.

The *Cuspidatus* and *Molares* of the fœtus are not formed so fast as the *Incisores;* they generally all appear nearly at the same time, viz: about the twentieth, or twenty-fourth month; however, the first grinder is often more advanced within the socket than the *Cuspidatus*, and most commonly appears before it.

These twenty are the only teeth that are of use to the child from the seventh, eighth, or ninth month, till the twelfth or fourteenth year. These are called the temporary, or milk teeth, because they are all shed between the years of seven and fourteen, and are supplied by others.

OF THE CAUSE OF PAIN IN DENTITION.

These twenty teeth, in cutting the gum, give pain, and produce many other symptoms which often prove fatal to children in dentition. It has been generally supposed that these symptoms arise from the tooth's pressing upon the inside of the gum, and working its way mechanically; but the following observations seem to be nearer the truth.

The teeth, when they begin to press against the gum, irritate it, and commonly give pain. The gums are then affected with heat, swelling, redness, and the other symptoms of inflammation. The gum is not cut through by simple or mechanical pressure, but the irritation and consequent inflammation produces a thinning, or wasting of the gum at this part; for it often happens that when an extraneous, or a dead substance, is contained in the body, that it produces a destruction of the part between it, and that part of the skin which is nearest it, and seldom of the other parts, excepting those between it and the surface of a cavity opening externally, and that by no means so frequently. And in those cases, there is an absorption of the solids, or of the part destroyed, not a melting down, or solution of them in to pus. The teeth are to be looked upon as extraneous bodies, with respect to the gum, and as such they irritate the inside of that part in the same manner as the pus of an abscess, an exfoliation of a bone, or any other extraneous body; and therefore produce the same symptoms, excepting only the formation of matter. If, therefore, these symptoms attend the cutting of the teeth, there can be no doubt of the propriety of opening the way for them; nor is it ever, as far as I have observed, attended with any dangerous consequence.

OF THE FORMATION AND PROGRESS OF THE ADULT TEETH.

Having now considered the first formation, and the progress of the temporary teeth, we shall next describe the formation of those teeth which are to serve through life.

In this enquiry, to avoid confusion, I shall confine the description to the teeth in the lower jaw; for the only difference between those in the two jaws, is in the time of their appearance, and generally it is later in the upper jaw. Their formation and appearance proceeds not regularly from the first *Incisor* backwards to to the *Dens Sapientiæ*, but it begins at two points on each side of both jaws, viz: at the first *Incisor*, and at the first *Molaris*. The teeth between these two points make a quicker progress than those behind.

The pulp of the first adult *Incisor*, and of the first adult *Molaris* begin to appear in a fœtus of seven or eight months, and five or six months after birth the ossification begins in them, soon after birth the pulp of the second *Incisor* and *Cuspidatus* begin to be formed, and about eight or nine months afterwards they begin to ossify; about the fifth or sixth year the first *Bicuspis* appears; about the sixth or seventh the second *Bicuspis*, and the second *Molaris*; and about the twelfth, the third *Molaris* or *Dens Sapientiæ*. The first five may be called the permanent teeth: they differ from the temporary in having larger fangs The permanent *Incisores* and *Cuspidati* are much thicker and broader, and the *Molares* are succeeded by *Bicuspides*, which are smaller, and have but one fang.

All these permanent or succeeding teeth are formed in distinct *Alveoli* of their own; so that they do not fill up the old sockets of the temporary teeth, but have their new *Alveoli* formed as the old *ones* decay.

The first *Incisor* is placed on the inside of the root of the corresponding temporary tooth, and deeper in the jaw. The second *Incisor* and the *Cuspidatus* begin to be formed on the inside, and somewhat under the temporary second *Incisor* and *Cuspidatus*. These three are all situated much in the same manner, with respect to the first set; but as they are larger, they are placed somewhat farther back in the circle of the jaw.

The first *Bicuspis* is placed under, and somewhat farther back than the first temporary grinder, or fourth tooth of the child.

The second *Bicuspis* is placed immediately under the second temporary grinder.

The second *Molaris* is situated in the lengthening tubercle in the upper jaw, and directly under the coronoid process in the lower.

The third *Molaris*, or *Dens Sapientiæ*, begins to form immediately under the coronoid process.

The first adult *Molaris* comes to perfection, and cuts the gum about the twelfth year of age, the second about the eighteenth, and the third, or *Dens Sapientiæ*, from the twentieth to the thirtieth: so that the *Incisores* and *Cuspidati* require about six or seven years, from their first appearance, to come to perfection; the *Bicuspides* about seven or eight; and the *Molares* about twelve.

It sometimes happens that a third set of teeth appears in very old people; when this does happen, it is in a very irregular manner, sometimes only one, at other times more, and now and then a complete set comes in both jaws. I never saw an instance of this kind but once, and there two fore teeth shot up in the lower jaw.

I should suppose that a new alveolar process must be also formed in such cases, in the same manner as in the production of the first and second sets of teeth. From what I can learn, the age at which this happens is generally about seventy. From this circumstance, and another that sometimes happens to women at this age, it would appear that there is some effort in nature to renew the body at that period.

When this set of teeth which happens so late in life, is not complete, especially where they come in one jaw, and not in the other, they are rather hurtful than useful; for in that case we are obliged to pull them out, as they only wound the opposite gum.

where the pulp adheres to the jaw, meet in the middle, and thereby divide the mouth of the cavity into two openings ; and from the edges of these two openings the two fangs grow.

We often find that a distinct ossification begins in the middle of the general cavity upon the root of the pulp, and two processes coming from the opposite edges of the bony shell join it ; which answers the same purpose.

When there are three fangs, we see three processes coming from so many points of the brim of the cavity, which meet in the centre, and divide the whole into three openings ; and from these are formed the three fangs. We often find the fangs forked at their points especially in the *Bicuspides.* In this case, the sides of the fang as it grows, come close together in the middle, making a longitudinal groove on the outside; and this union of the opposite sides divides the mouth of the growing fang into two orifices, from which the two points are formed.

By the observations which I have made in unravelling the texture of the teeth, when softened by an acid, and from observing the disposition of the red parts in the tooth of growing animals, interruptedly fed with madder, I find that the bony part of a tooth is formed of *Lamellæ,* placed one within another. The outer *Lamella* is the first formed, and is the shortest: the more internal *Lamellæ* lengthen gradually towards the fang, by which means, in proportion as the tooth grows longer, its cavity grows smaller, and its sides grow thicker.

How the earthy and animal substance of the tooth is deposited on the surface of the pulp is not perhaps to be explained.

OF THE FORMATION OF THE ENAMEL.

In speaking of the enamel we postponed treating of its formation, till it could be more clearly understood ; and now we shall previously describe some parts which we apprehend to be subservient to its formation, much in the same manner as the pulp is to the body of the tooth.

From its situation, and from the manner in which the teeth grow, one would imagine that the enamel is first formed ; but the bony part begins first, and very soon after the enamel is formed upon it.—There is another pulpy substance opposite to that which we have described; it adheres to the inside of the capsula, where the gum is joined to it, and its opposite surface lies in contact with the basis of the above described pulp, and afterwards with the new formed basis of the tooth : whatever eminences or cavities the one has, the other has the same, but reversed, so that they are moulded exactly to each other.

In the *Incisores* it lies in contact not with the sharper cutting edge of the pulp or tooth, but against the hollowed inside of the tooth; and in the *Molares* it is placed directly against their base, like a tooth of the opposite jaw. It is thinner than the other pulp, and decreases in proportion as the teeth advance. It does not seem to be very vascular. The best time for examining it is in a fœtus of seven or eight months old.

In the granivorous animal, such as the horse, cow, &c. whose teeth have the enamel intermixed with the bony part, and whose teeth, when forming, have as many interstices as there are continuations of the enamel, we find processes from the pulp passing down into those interstices as far as the pulp which the tooth is formed from, and there coming into contact with it.

After the points of the first described pulp are begun to ossify, a thin covering of enamel is spread over them, which increases in thickness till some time before the tooth begins to cut the gum

The enamel appears to be secreted from the pulp above described, and perhaps from the capsula which incloses the body of the tooth. That it is from the pulp and capsula seems evident in the horse, ass, ox, sheep, &c., therefore we have little reason to doubt of it in the human species. It is a calcareous earth, probably dissolved in the juices of our body, and thrown out from these parts which act here as a gland. After it is secreted, the earth is attracted by the bony part of the tooth, which is already formed; and upon that surface it crystallizes.

The operation is similar to the formation of the shell of the egg, the stone in the kidneys and bladder, and the gall stone. This accounts for the striated crystallized appearance which the enamel has when broken, and also for the direction of these *Striæ.*

The enamel is thicker at the points and basis than at the neck of the teeth, which may be easily accounted for from its manner of formation; for if we suppose it to be always secreting, and laid equally over the whole surface, as the tooth grows, the first formed will be the thickest; and the neck of the tooth, which is the last formed part inclosed in this capsula, must have the thinnest coat; and the fang, where the *Periosteum* adheres, and leaves no vacant space, will have none of the enamel.

At its first formation it is not very hard; for by exposing a very young tooth to the air, the enamel cracks, and looks rough; but by the time that the teeth cut the gum, the enamel seems to be as hard as ever it is afterward; so that the air seems to have no effect in hardening it.

OF THE MANNER OF SHEDDING OF TEETH.

An opinion has commonly prevailed, that the first set of teeth are pushed out by the second; this, however, is very far from being the case; and were it so, it would be attended with a very obvious inconvenience; for, were a tooth pushed out by one underneath, that tooth must rise in proportion to the growth of the succeeding one, and stand in the same proportion above the rest. But this circumstance never happens: neither can it; for, the succeeding teeth are formed in new and distinct sockets, and generally the *Incisores* and the *Cuspidati* of the second set are situated on the inside of the corresponding teeth of the first set; and we find, that in proportion to the growth of the succeeding teeth, the fangs of the first set decay, till the whole of the fang is so far destroyed, that nothing remains but the neck, or that part of the fang to which the gum adheres, and then the least force pushes the tooth out. It would be very natural to suppose, that this was owing to a constant pressure from the rising teeth against the fangs or sockets of the first set: but it is not so; for, the new alveoli rise with the new teeth, and the old alveoli decay in proportion as the fangs of the old teeth decay, and when the first set falls out, the succeeding teeth are so far from having destroyed, by their pressure, the parts against which they might be supposed to push, that they are still inclosed, and covered by a complete bony socket. From this we see, that the change is not produced by a mechanical pressure, but is a particular process in the animal economy.

I have seen two or three jaws where the second temporary grinders were shedding in the common way, without any tooth underneath; and in one jaw, where both the grinders were shedding, I met with the same circumstance.

A remarkable instance of this sort occurred to me in a lady who desired me to look at a loose tooth, which I found was the last temporary tooth not yet shed. I desired that it might be drawn out, and told her it was of no use, and could not by any art be fixed, as it was one of the teeth that is naturally shed, and that another might come in its place: however she was disappointed.

These cases prove evidently, that in shedding, the first teeth are not pushed out by the second set, but that they grow loose, and fall out of their own accord. That the succeeding teeth have some influence on the shedding of the temporary set is proved by those very cases; since in one of the first mentioned the person was above twenty years of age, and in the other the lady was thirty; and it is reasonable to believe, that the shedding of these teeth was so late in those instances, from the want of the influence, whatever it is, of the new teeth. When the *Incisores* and *Cuspidati* of the new set are a little advanced, but long before they appear through their bony sockets, there are small holes leading to them on the inside, or behind the temporary sockets and teeth; and these holes grow larger and larger, till at last the body of the tooth passes quite through them.

OF THE GROWTH OF THE TWO JAWS.

As a knowledge of the manner in which the two jaws grow, will lead to the better understanding the shedding of the teeth; and as the jaws seem to differ in their manner of growing, from other bones, and also vary according to the age, it will be here proper to give some account of their growth.

In a fœtus three or four months old, we have described the marks of four or five teeth, which occupy the whole length of the upper jaw, and all that part of the lower which lies before the coronoid process, for the fifth tooth is somewhat under that process.

These five marks become larger, and the jaw bones of course increase in all directions, but more considerably backwards; for in a fœtus of seven or eight months, the marks of six teeth in each side of both jaws are to be observed, and the sixth seems to be in the place where the fifth was; so that in these last four months the jaw has grown in all directions in proportion to the increased size of the teeth, and besides has lengthened itself at its posterior end as much as the whole breadth of the socket of that sixth tooth.

The jaw still increases in all points till twelve months after birth, when the bodies of all the six teeth are pretty well formed; but it never after increases in length between the symphysis and the sixth tooth; and from this time too, the alveolar process, which makes the anterior part of the arches of both jaws, never becomes a section of a larger circle, whence the lower part of a childs face is flatter, or not so projecting forwards as in the adult.

After this time the jaws lengthen only at their posterior ends; so that the sixth tooth, which was under the coronoid process in the lower jaw, and in the tubercles of the upper jaw of the fœtus, is at last, viz: in the eighth or ninth year, placed before these parts; and then the seventh tooth appears in the place which the sixth occupied, with respect to the coronoid process, and tubercle; and about the twelfth or fourteenth year, the eighth tooth is situated where the seventh was placed. At the age of eighteen, or twenty, the eighth tooth is found before the coronoid process in the lower jaw, and under, or somewhat before the tubercle in the upper jaw, which tubercle is no more than a succession of sockets for the teeth till they are completely formed.

In a young child the cavity in the temporal bone for the articulation of the jaw, is nearly in a line with the gums of the upper jaw; and for this reason the condyle of the lower jaw is nearly in the same line; but afterwards, by the addition of the alveolar process and teeth, the line of the gums in the upper jaw descends considerably below the articular cavity; and for that reason the condyloid process is then lengthened in the same proportion.

In old people who have lost all their teeth, the articulation comes again into the same line with the gums of the upper jaw; but in the lower jaw, the condyles cannot be diminished again for accommodating it to the upper, so that it necessarily projects beyond the gums of the upper jaw at the fore part. When the mouth is shut, the projection of the jaw at the chin, fits the two jaws to each other at that place where the grinders were situated, and where the strength of mastication lies; for if the chin was not further from the centre of motion than the gums of the upper jaw, at the fore part, the jaws, in such people as have lost all their teeth, would meet in a point at the fore part, like a pair of pincers, and be at a considerable distance behind.

THE REASON FOR THE SHEDDING OF THE TEETH.

As the shedding of the teeth is a very singular process in the animal economy, many reasons have been assigned for it; but these reasons have not carried along with them that conviction which is desired. Authors have not fully considered the appearances which naturally explain themselves; nor have they considered the advantages necessarily arising from the size and construction of only such a number as the first set; nor have they considered fully the disadvantages that such size and construction would have, if continued when it is necessary to have a greater number, which is the case with the adult.

We shall consider these advantages in a child where the shedding teeth are all completely formed, which will be setting them in the clearest point of light; and also, the disadvantages that would occur, if in the adult these were not changed for another set somewhat different.

If the child had been so contrived, as not to have required teeth till the time of the second set's appearing, there would have been no occasion for a new set: but the jaw-bones being considerably smaller in children than in adults, and it being necessary that they should have two grinders, there is not room for *Incisores* and *Cuspidati* of sufficient size to serve through life; and the first formed grinders having necessarily too small fangs, and the jaw increasing at the back part only, these two grinders would have been protruded too far forwards, and at too great a distance from the centre of motion. This variation in the size of the teeth is likewise a reason why the second set are not formed in the sockets of the first; and why the old sockets are destroyed.

These circumstances with regard to the shedding of the teeth, contradict the notion of the second set being made broader and thicker, by the resistance they meet with in pushing out the first. For were we on a partial view of the subject, to admit the supposition, the *Bicuspides* would effectually overturn our hypothesis; because here the second set are much smaller than the first, and yet the resistance would be greater to them than to the *Incisores*.

From the manner in which the teeth are shed, it is evident that drawing a temporary tooth, for the easier protrusion of the one underneath, will be of no great service; for in general it falls out before the other can touch it. But it is often of much more service to pull out the neighboring or adjacent temporary tooth; for we must be convinced by what has been advanced with regard to the changes in size, that excepting the whole were to shed at the same time, or the order of shedding, viz: from before backwards, were to be inverted, that the second set of *Incisores* and *Cuspidati* must be pinched in room, till the grinders are also shed: and therefore we find it often of use to draw a temporary tooth, that is placed further back; and it would, perhaps, be right upon the whole, always to draw, at least the first grinder; and, perhaps, some time after, the second grinder also.

OF THE CAVITY FILLING UP AS THE TEETH WEAR DOWN.

A tooth very often wears down so low, that its cavity would be exposed, if no other alteration were produced in it. To prevent this, nature has taken care that the bottom part of the cavity should be filled up by new matter, in proportion as the surface of the Teeth is worn down. This new matter may be easily known from the old; for when a Tooth has been worn down almost to the neck, a spot may always be seen in the middle, which is more transparent, and at the same time of a darker colour, (occasioned, in some measure, by the dark cavity under it) and is generally softer than the other. Any person may be convinced of the truth of these observations, by taking two Teeth of the same class, but of very different ages, one just completely formed, the other worn down almost to its neck. In the last he will observe the dark spot in the centre; and if as much is cut off from the complete Tooth as hath been worn off the old one, the cavity of the young Tooth will be found cut through; and on examining the other, its cavity will be found filled up below that surface.(D) Now this observation contradicts the idea of the hole leading into the cavity of the Tooth being closed up; and what is still a further proof of it, I have been able to inject vessels in the cavities of the Teeth in very old people when the Alveolar Process has been gone, and the Teeth very loose in the Gum.

Old people are often found to have very good sets of Teeth, only pretty much worn down. The reason of this is, that such people never had any disorder in their Teeth, or Alveolar Processes, sufficient to occasion the falling of one Tooth. For if by accident one Tooth is lost, the rest will necessarily fail in some degree, even though they are sound, and likely to remain so, had not this accident happened; and this weakening cause is greater, in proportion to the number that are lost. From this observation, we see that the Teeth support one another.

(D) We could in no way account for the filling up of the natural cavity of the teeth as they wear down by mastication, if they were, as many suppose them to be, inorganic bodies, beyond the reach of the circulating fluids or the secretory and excretory vessels. This entire filling up or obliteration of the natural cavity of the teeth is not always, although it may be generally, a consequence of the loss of substance from the surface, as has been stated. I have frequently seen in the teeth of old people the cavity completely filled with new bone, and the tooth solid, entirely divested of sensibility, when no perceptible wearing had taken place. The *manner* in which this is effected is very satisfactorily explained by Mr. Thomas Bell, whose experience and whose opportunities from having been for twenty years or more lecturer at Guy's Hospital, have undoubtedly made him in his profession, the ablest Physiologist of the present day—and from having long enjoyed a friendly acquaintance with him, and regarding his views generally, as being physiologically and practically correct, I shall unhesitatingly quote his language in support of my own professional views.—Mr. Bell remarks, "as the superstratum of bone becomes thinner by abrasion, the membrane lining the internal cavity, from which, as I have before shown, *the bone of the tooth was originally produced*, now again resumes its ossific action and produces a fresh layer of bony matter, which in some cases at length fills the socket and obliterates the membrane from which it has been secreted. This is particularly the case in sailors who have lived much upon hard biscuits, a circumstance which tends greatly to accelerate the abrasion of the surface, a process perfectly and obviously analagous to that of the wearing of the teeth in graminivorous animals."

OF THE CONTINUAL GROWTH OF THE TEETH.

It has been asserted that the Teeth are continually growing, and that the abrasion is sufficient to keep them always of the same length; but we find that they grow at once to their full length, and that they gradually wear down afterwards; and that there is not even the appearance of their continuing to grow. The Teeth would probably project a little farther out of the Gum, if they were not opposed by those in the opposite Jaw; for in young people, who had lost a Tooth before the rest had come to their full length, I have seen the opposite Tooth project a little beyond the rest, before they were at all worn down. It may be further observed, that when a Tooth is lost, the opposite one may project from the disposition of the Alveolar Process to rise higher, and fill up at the bottom of the sockets; and the want of that natural pressure seems to give that disposition to these processes, which is best illustrated in those Teeth which are formed deeper in their sockets than usual. As a proof that the Teeth continue growing, it has been said that the space of a fallen Tooth is almost filled up by the increased thickness of the two adjacent Teeth, and the lengthening of that which is opposite. There is an evident fallacy in the case; either the observations have been made upon such Jaws as above described, or the appearances have not been examined with sufficient accuracy; for when the space appears to have become narrow by the approximation of the two adjacent Teeth, it is not owing to any increase of their breadth, but to their moving from that side where they are well supported, to the other side, where they are not. For this reason they get an inclined direction; and I observe it extends to the several adjacent Teeth in a proportional less degree, and affects those which are behind, more than those which are before the vacant space.

In the Lower-Jaw the back Teeth are not fixed perpendicularly, but all inclined forward; and the depression of the Jaw increases this position; the action of the Teeth, when thrown out of the perpendicular, has also a tendency to increase that oblique direction, as a pair of scissars, in cutting, pushes every thing forward, or from the centre of motion: therefore this alteration, I think, is most commonly observable in the Lower-Jaw.

And that Teeth are not actually always growing in breadth, must be obvious to every person who considers, that in many people, through life, the Teeth stand so wide from each other, that there are considerable spaces between them; which could not be the case if they were always growing in thickness.

We might add too, that according to the hypothesis, the *Dens Sapientiæ* should grow to an enormous size backward, because there it has no check from pressure; and in people where the *Dens Sapientiæ* is wanting in one Jaw, which is very common, it should grow to an uncommon length in the opposite Jaw, for the same reason. But neither of these things happens.

I need hardly take notice, that when a Tooth has lost its opposite it will in time become really so much longer than the rest, as the others grow shorter by abrasion; and I observe that the Tooth which is opposite to the empty space, becomes in time not only longer for the above-mentioned reason, but more pointed. The apex falls into the void space, and the two sides are rubbed away against the sides of the two approaching Teeth next to that space.

The manner of their formation likewise shews that Teeth cannot grow beyond a certain limited size. To illustrate this I may observe, that I have often, in the dead body of adults, found the left *Cuspidatus* of the Upper-Jaw, with its points scarcely protruding out of the Alveolar Process, though the Tooth was completely formed, and longer than the other by the whole point, which in that other was worn away. This Tooth, at its first formation, had been deeper in the Jaw than what is common; and after it had grown to the ordinary size, it grew no longer, though it had not the resistance of the opposite Teeth to set bounds to its increase: yet commonly in these cases the Tooth continues to project further and further through the Gum; though this is not owing to its growing longer, but to the socket filling up behind it, and thereby continuing to push it out by slow degrees.

OF THE SENSIBILITY OF TEETH.

The Teeth would seem to be very sensible; for they appear to be subject to great pain, and are easily and quickly affected by either heat or cold.

We may presume that the bony substance itself, is not capable of conveying sensations to the mind, because it is worn down in mastication, and occasionally worked upon by operators in living bodies, without giving any sensation of pain in the part itself.

In the cavity of a Tooth it is well known that there is exquisite sensibility; and it is likewise believed, that this is owing to the nerve in that cavity. This nerve would seem to be more sensible than nerves are in common; as we do not observe the same violent effects from any other nerve in the body being exposed either by wound, or sore, as we do from the exposure of the nerve of a Tooth. Perhaps the reason of the intenseness, as well as the quickness of the sense of heat and cold in the Teeth, may be owing to their communicating these to the nerve sooner than any other part of the body.(E)

(E) One of the strongest proofs we have that the bone of the tooth possesses life, and is vascular to a nice degree, is the acute sensation which is felt when an instrument is passed slightly over a tooth that has been denuded of its enamel, or when the gum has separated from the enamel and exposes the neck of the tooth. I have, in the course of my practice, had many patients apply to me supposing that their teeth were in a state of decay from the pain felt in brushing them, or when they accidentally touched them with an instrument, or with the finger nail. I have for many years believed that the whole sensibility of a tooth did not depend solely on the nerve, within its internal cavity, and every years' observation confirms me more strongly in that belief, which can be easily proved in such cases as I have named; notwithstanding, Mr. Hunter very confidently asserts, "that the bony substance is not capable of conveying sensations to the mind."

OF SUPERNUMERARY TEETH.

We often meet with Supernumerary Teeth; and this, as well as some other variations, happens oftener in the Upper than in the Lower-Jaw, and I believe, always in the *Incisores* and *Cuspidati.* I have only met with one instance of this sort, and it was in the Upper-Jaw of a child about nine months old: there were the bodies of two Teeth, in shape like the *Cuspidati*, placed directly behind the bodies of the two first permanent *Incisores*; so that there were three Teeth in a row, placed behind one another, viz. the temporary *Incisor*, the body of the permanent *Incisor*, and that supernumerary tooth. The most remarkable circumstance was, that these supernumerary teeth were inverted, their points being turned upwards, and bended, by the bone which was above them not giving way to their growth, as the alveolar process does.

It often happens that the *Incisores* and *Cuspidati*, in the upper jaw especially, are so irregularly placed, as to give the appearance of a double row. I once saw a remarkable instance of this in a boy; the second *Incisor* in each side was placed farther back than what is common, and the *Cuspidatus* and first *Incisor* closer together, than if the second *Incisor* had been directly between them; so that the appearance gave an idea of a second row of teeth.

This happens only in the adult set of teeth, and is owing to there not being room in the jaw for this second set, the jaw bone being formed with the first set of teeth, and never increasing afterwards; so that if the adult set does not pass further back, they must over-lap each other, and give the appearance of a second row. (F)

OF THE USE OF THE TEETH SO FAR AS THEY AFFECT THE VOICE.

The teeth serve principally for mastication; and that use need not be farther explained.

They serve likewise a secondary, or subordinate purpose; giving strength and clearness to the sound of the voice, as is evident from the alteration produced in speaking, when the teeth are lost.

This alteration, however, may not depend entirely upon the teeth, but, in some measure, on the other organs of the voice having been

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(F) I have very frequently found these supernumerary teeth, and have seen them in all parts of the mouth, on the sides, and as far back as the wisdom teeth in the upper jaw — but most frequently among the superior incisores, and are generally of the shape described by Mr. Hunter. I do not remember having seen one of this kind in the lower jaw. I have at this time two patients who have five beautifully formed lower incisores instead of four; and some years ago, had one patient who had five beautifully formed upper incisores instead of four, with perfect arrangement in both cases. I have also a patient whose canine tooth in the right side adjoins the central incisor with a perfect lateral incisor standing between the canine and first bicuspis, in perfect arrangement. In relation to the irregularity spoken of here, I shall have occasion to speak at considerable length in a subsequent number, when the operations spoken of by Mr. Hunter are considered, accustomed to them; and therefore when they are gone, those other organs may be put out of their common play, and may not be able to adapt themselves so well to this new instrument. Yet I believe that habit in this case has no great effect; for those people seldom or never get the better of the defect; and young children, who are shedding their teeth, and are, perhaps, without any fore teeth for half a year or more, always have that defect in their voice, till the new teeth come, and as these grow the voice becomes clear again.

This use seems to be entirely in the fore teeth; for the loss of one of these makes a great alteration, and the loss of two or three grinders seems to have no sensible effect. As an argument for the use of the teeth in modifying the sound of the voice, we may observe, that the fore teeth come at a time when the child begins to articulate sounds, and at that time they are so loose in the gums, that they can be of very little service in mastication.

Every defect in speech, arising from this defect in the organ, is generally attended with what we call a lisp. People who have lost all their teeth, and most old people for that reason, lose, in a great measure, their voice. This arises partly from the loss of the fore teeth, but principally from the loss of all the teeth, and of the alveolar processes of both jaws, by which means the mouth becomes too small for the tongue, and the lips and cheeks become flaccid; insomuch that the nicer movements of these parts, in the articulation of sounds, are obstructed and thence the words and syllables are indistinctly pronounced, and slurred, or run into one another.

UNDER WHAT CLASS DO THE HUMAN TEETH COME.

Natural historians have been at great pains to prove from the teeth, that man is not a carnivorous animal; but in this, as in many other things, they have not been accurate in their definitions; nor have they determined what a carnivorous animal is.

If they mean an animal that catches and kills his prey with his teeth, and eats that flesh of the prey just as it is killed, they are in the right; man is not in this sense a carnivorous animal, and therefore he has not teeth like those of a lion; and this, I presume, is what they mean.

But if there meaning were that the human teeth are not fitted for eating meat that has been catched, killed, and dressed by art, in all the various ways that the superiority of the human mind can invent, they are in the wrong. Indeed, from this confined way of thinking it would be hard to say what the human teeth are fitted for; because, by the same reasoning man is not a graminivorous animal, as his teeth are not fitted for pulling vegetable food, &c. They are not made like those of cows or horses, for example.

The light in which we ought to view this subject is, that man is a more perfect or complicated animal than any other; and is not made like others, to come at his food by his teeth, but by his hands, directed by his superior ingenuity; the teeth being given only for the purpose of chewing the food, in order to its more easy digestion: and they, as well as his other organs of digestion, are fitted for the conversion of both animal and vegetable substances into blood; and thence he is able to live in a much greater variety of circumstances than any other animal, and has more opportunities of exercising the faculties of his mind. He ought, therefore, to be considered as a compound, fitted equally to live upon flesh and upon vegetables.

OF THE DISEASES OF THE TEETH.

The teeth are subject to diseases as well as other parts of the body. Whatever the disorder is that affects them, it is generally attended with pain; and from this indeed we commonly first know that they are affected.

Pain in the teeth proceeds, I believe, in a great measure, from the air coming into contact with the nerve in the cavity of the tooth; for we seldom see people affected with the tooth-ache, but when the cavity is exposed to the air.

It is not easy to say by what means the cavity comes to be exposed.

The most common disease to which the teeth are subject, begins with a small, dark colored speck, generally on the side of the tooth where it is not exposed to pressure; from what cause this arises is hitherto unknown. The substance of the tooth thus discolored, gradually decays, and an opening is made into the cavity. As soon as the air is thereby admitted, a considerable degree of pain arises, which is probably owing to the admission of the air, as it may be prevented by filling the cavity with lead, wax, &c. This pain is not always present; the food, and other substances, perhaps fill up the hole occasionally, and prevent the access of the air, and of consequence the pain, during the time they remain in it. When an opening is made into the cavity of the tooth, the inside begins to decay, the cavity becomes larger, the breath at the same time often acquires a putrid *Fœtor*, the bone continues to decay till it is no longer able to support the pressure of the opposite tooth, it breaks and lays the cavity open.

We have not as yet found any means of preventing this disease, or of curing it; all that can be done, is to fill the hole with lead, which prevents the pain, and retards the decay; but after the tooth is broken, this is not practicable; and for that reason it is then best to extract it.

It would be best of all to attempt the extraction of a tooth by drawing it in the direction of its axis: but that not being practicable by the instruments at present in use, which pull latterally, it is the next best to draw a tooth to that side where the alveolar process is weakest; which is the inside, in the two last grinders on each side of the lower jaw, and the outside in all the others.

It generally happens in drawing a tooth, that the alveolar process is broken, particularly when the grinders are extracted; but this is attended with no bad consequences, as that part of the alveolar process from which the tooth was extracted always decays.

In drawing a tooth, the patient complains of a disagreeable jarring noise, which always happens when any thing grates against the bones of the head.

OF CLEANING THE TEETH.

From what was said of the nature and use of the enamel, it is evident, that whatever is capable of destroying it, must be hurtful; therefore all acids, gritty powders, and injudicious methods of scaling the teeth are prejudicial: but simply scaling the teeth, that is, clearing them of the stony concretions which frequently collect about their necks, while nothing is scraped off but that adventitious substance, is proper and useful. If not removed by art, the quantity of the stony matter is apt to increase, and to affect the gum. This matter first begins to form on the tooth near to the gum; but not in the very angle, because the motion of the gum commonly prevents the accumulation of it at this part. I have seen it cover not only the whole tooth, but a great part of the gum: in this case there is always an accumulation of a very putrid matter, frequently considerable tenderness and ulceration of the gum, and scaling becomes absolutely necessary. (o)

OF TRANSPLANTING THE TEETH.

From considering the almost constant variety of the size and shape of the same class of teeth in different people, it would appear almost

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(o.) The animal fluids, when out of the course of the general circulation, especially when they stagnate in cavities, are apt to deposit an absorbent earth, and form concretions. This earth is sometimes contained in the fluids; and is only deposited, as in the formation of the stone in the urinary passages: in some cases, perhaps, the fluids undergo a change, by which the earth is first formed, and afterwards deposited. This deposition takes place particularly in weakened parts, or where the circulation is languid, or where there are few arteries, such as about joints and tendons; as if it were intended to strengthen these parts, if they should at any time give way; for if an artery, for instance, is overcome by the action of the heart, and unnaturally dilated, its coats have commonly these concretions formed every where in their interstices. The same thing happens also in the coats of incysted tumors, which are constantly distended; in cases of distensions of the tunica vaginalis testis, &c. It is also apt to take place in parts which have lost their natural functions: as in the coats of the eye in cases of blindness, and in diseased lymphatic glands, &c. and where the living power is diminished in the system, as in the arteries, membranes, &c. of old people; and in some particular habits, as in those who are affected by the gout.

The same sort of deposition takes place likewise, where there is any substance with such properties as render it a fit basis for crystallization; as when extraneous bodies are lodged in the bladder: whence such bodies are so often found to form the *nucleus* of a stone. The same thing happens in the bowels of many animals; whence the *nucleus* of intestinal concretions, or bezoars, is commonly a nail or some indigestible substance which had been swallowed. The crust, which collects upon the teeth, seems to be a crystallization of the same nature.
HUNTER.

impossible to find the tooth of one person that should fit, with any degree of exactness, the socket of another; and this observation is supported, and indeed would seem to be proved by observing the teeth in skeletons. Yet we can actually transplant a tooth from one person to another, without great difficulty, nature assisting the operation, it is done in such a way that she can assist; and the only way in which nature can assist, with respect either to size or shape, is by having the fang of the transplanted tooth rather smaller than the socket. The socket in this case grows to the tooth. If the fang is too large, it is impossible indeed to insert it at all in that state; however, if the fang should be originally too large, it may be made less; and this seems to answer the purpose as well.

The success of this operation is founded on a disposition in all living substances, to unite when brought into contact with one another; although they are of a different structure; and even although the circulation is only carried on in one of them.

This disposition is not so considerable in the more perfect or complex animals, such as quadrupeds, as it is in the more simple or imperfect; nor in old animals, as in young: for the living principle in young animals, and those of simple construction, is not so much confined to, or derived from one part of the body; so that it continues longer in a part separated from their bodies, and even would appear to be generated in it for a time; while a part separated from an older, or more perfect animal, dies sooner, and would appear to have its life entirely dependent on the body from which it was taken.

Taking off the young spur of a cock, and fixing it to his comb, is an old and well known experiment.

I have also frequently taken out the *Testis* of a cock and replaced it in his belly, where it was adhered, and has been nourished; nay, I have put the *Testis* of a cock into the belly of a hen with the same effect.

In like manner a fresh tooth, when transplanted from one socket to another, becomes to all appearance a part of that body to which it is now attached, as much as it was of the one from which it was taken; while a tooth which has been extracted for some time, so as to lose the whole of its life, will never become firm or fixed; the sockets will also in this case acquire the disposition to fill up, which they do not in the case of the insertion of a fresh tooth.

These appearances show that the living principle exists in the several parts of the body, independent of the influences of the brain, or circulation, and that it subsists by these, or is indebted to them for its continuance; and in proportion as animals have less of brain and circulation, the living power has less dependence on them, and becomes a more active principle in itself: and in many animals there is no brain nor circulation, so that this power is capable of being continued equally by all the parts themselves, such animals being nearly similar in this respect to vegetables.

A
PRACTICAL TREATISE
ON THE
DISEASES OF THE TEETH,

INTENDED AS A

SUPPLEMENT,

TO THE

NATURAL HISTORY OF THOSE PARTS,

BY. JOHN HUNTER,

SURGEON EXTRAORDINARY TO THE KING, AND F. R. S. LONDON.

PART II.

NEW-YORK:
1839.

INTRODUCTION.

The importance of the Teeth is such, that they deserve our utmost attention, as well with respect to the preservation of them, when in a healthy state, as to the methods of curing them, when diseased. They require this attention, not only for the preservation of themselves, as instruments useful to the body, but also on account of other parts with which they are connected; for diseases in the Teeth are apt to produce diseases in the neighboring parts, frequently of very serious consequences; as will evidently appear in the following treatise.

One might at first imagine, that the diseases of tho Teeth must be very simple, and like those which take place every where else in the bony parts of our body; but experience shows the contrary. The teeth being singular in their structure,and some other circumstances, have diseases peculiar to themselves. These diseases, considered abstractedly, are indeed very simple; but by the relations which the Teeth bear to the body in general, and to the parts with which they are immediately connected, they become extremely complicated. The diseases which may arise in consequence of those of the Teeth, are various; such as Abcesses, Carious Bones, &c.: many of which, although proceeding originally from the Teeth, are more the object of the Surgeon than of the Dentist, who will find himself as much at a loss in such cases as if the abcess or carious bone were in the leg, or any other distant part. All the diseases of the teeth, which are common to them with the other parts of the body, should be put under the management of the physician or surgeon; but those which are peculiar to the teeth, and their connections, belong properly to the dentist.

It is not my present purpose to enumerate every disease capable of producing such symptoms as may lead us to suspect the teeth; for the jaws may be affected by almost every kind of disorder. I shall therefore confine myself to the diseases of the teeth, gums, and alveolar processes ; which parts having a peculiar connection, their diseases fall properly within the province of the dentist. I shall also purposely avoid entering into common surgery ; not to lead the dentist beyond his depth, and to matters of which it is to be supposed he has not acquired a competent knowledge

In order that the reader may perfectly understand what follows, it will be necessary for him previously to consider and comprehend the anatomy and uses of every part of a tooth, as explained in my *Natural History of the Human Teeth,* to which I shall be obliged frequently to refer. Without such previous study, the dentist will often be at a loss to account for many of the diseases and symptoms mentioned here, and will retain many vulgar errors imbibed by conversing with ignorant people, or by reading books in which the anatomy and physiology of the teeth are treated without a sufficient knowledge of the subject.

Whichever of the connected parts be originally diseased, the teeth are commonly the greatest sufferers. None of those parts can be distempered, without communicating to the teeth such morbid effects, as tend to the destruction of them.

A PRACTICAL TREATISE

ON THE

DISEASES OF THE TEETH.

CHAP. I.—SEC. I.

THE DECAY OF THE TEETH, ARISING FROM ROTTENNESS.

The most common disease to which the Teeth are exposed, is such a decay as would appear to deserve the name of mortification. But there is something more; for the simple death of the part would produce but little effect, as we find that Teeth are not subject to putrefaction after death; and therefore I am apt to suspect, that, during life, there is some operation going on, which produces a change in the diseased part. It almost always begins externally in a small part of the body of the tooth, and commonly appears at first as an opake white spot. This is owing to the enamel's losing its regular and crystalized texture, and being reduced to a state of powder, from the attraction of cohesion being destroyed; which produces similar effects to those of powdered crystal. When this has crumbled away, the bony part of the Tooth is exposed; and when the disease has attacked this part, it generally appears like a dark brown speck. Sometimes however, there is no change of colour, and therefore the disease is not observable, till it has made a considerable hole in the Tooth. The dead part is generally at first round, but not always; its particular figure depending more on the place where it begins, than on any other circumstance. It is often observed on the hollow parts of the grinding surface of the *Molares*, and there looks like a crack filled with a very black substance. In the incisors, the disease usually begins pretty near the neck of the Tooth; and the scooping process goes on enlarging the cavity, commonly across the same part of the Tooth, which almost divides it into two. When such a diseased tooth gives way, the mischief is occasioned by its body breaking off.

When it attacks the bony part, it appears first to destroy the earth, for the bone becomes softer and softer, and is at last so soft on the exterior exposed surface, that it can be picked away with a pin, and when allowed to dry, it cracks like dried clay.

It begins sometimes in the inside of the Tooth, although but rarely. In this case the Tooth becomes of a shining black, from the dark colour being seen through the remaining shell of the Tooth, and no hole is found leading into the cavity. (A.)

This blackness is seldom more than a portion of the bony part decayed or mortified. However, it often happens, that the remaining part of the Tooth becomes simply dead; in which state it is capable of taking on a dye. As it is generally on the external surface, one might expect no great mischief would ensue; but the tendency to mortification goes deeper and deeper, till at last it arrives at the cavity of the Tooth, and the mortification follows. Mortification is common to every part of the body: but in most other parts, this tendency is owing in a great measure to the constitution, which being corrected, that disposition ceases; but here it is local, and as such it would appear that we have no power of resisting it. When gone thus far, the decay makes a quicker progress, similar to those cases where the decay begins in the cavity; for then this disposition is given to the whole cavity of the Tooth, which being a much larger surface than what the disease had before to act upon, the increase of the decay seems to be in the same proportion: at last it scoops out its inner substance, till almost nothing is left but a thin shell, which, generally, being broken by mastication, a smaller or larger opening is made, and the whole cavity becomes at length exposed.

The canal in the Fang of the Tooth is more slowly affected; the scooping process appears to stop there, for we seldom know a fang become very hollow to its point, when in the form of a stump; and it sometime appears sound, even when the body of the Tooth is almost destroyed: hence I conclude, that the Fang of the Tooth has greater living powers than the Body, by which the process of the disease is retarded, and this part appears at last only to lose its living principle, and not to take on the mortifying process above described; for which reason it remains simply a dead Fang; however, it does not remain perfectly at rest. (B.)

This is the stage in which it is called a Stump. It begins now to lose its sensibility, and is seldom afterwards the cause of pain.

(A.) Mr. Hunter may have had satisfactory evidence of the fact stated in this section, of the internal origin of caries and of the blackening of the bony structure beneath the enamel, while there was no injury of that substance; but in all my practice for more than twenty years, I have never met with a solitary case of this nature. I am, therefore, firmly of the opinion, that caries of the teeth always commences with a destruction of the enamel, as described so correctly by Mr. Hunter, in the first two sections of this chapter.

(B.) The vitality or life of a tooth is often destroyed by blows, falls or other accidents; but this does not always occasion a decay or mortification of either the crown or fang; for I have seen such teeth twenty or thirty years after such accident, which, though slightly changed in color, were yet perfectly sound.—Therefore, the decay or mortification of a tooth and its death by accident, are entirely different things.

Thus in appearance, it will remain sometimes for many years, but there will be more or less of a change going on; Nature will be attempting to make up the deficiency, by endeavouring to increase the Stump; for in many cases we find the Stumps thickened and lengthened at their terminations, or small ends; but it is a process she is not equal to, therefore no advantages accrue from it. When she either fails in this process, or is in such a state as not to attempt it, then, by this condition of the tooth a stimulus is given to the alveolar processes, which produces a filling up of the socket from the bottom, whereby the stumps are gradually protruded. But although they are pushed out at the bottom, they seldom or never project farther beyond the gum than at first; and that part of the tooth which projects, seems to decay in proportion to its projection. Besides this decay at the external end or the stump, there is an absorption of the fang at the bottom, which is known by the following observation: the end of the stump, which was in the gum or jaw, becomes irregularly blunted, and often rough, and has not the appearance of the end of the fang of a sound tooth.

Such stumps are in general easily extracted, being attached often to little more than the gum, and that sometimes loosely.

Although the disease appears to be chiefly in the tooth itself, and but little to depend on external causes, yet in many cases the part which is already rotten, seems to have some influence upon that which remains; for if the rotten part be perfectly removed before it has arrived at the canal of the tooth, a stop is sometimes put to the farther progress of the decay, at least for a time.

However this is not constantly so; it is oftener the contrary; but it is expedient in most cases to make this trial, as it is always right to keep a tooth clean, and free from specks.

This decay of the teeth does not seem to be so entirely the effect of accident as might be imagined; for it sometimes takes place in them by pairs, in which case we may suppose it owing to an original cause coming into action at its stated time; the corresponding teeth being in pairs, with respect to the disease, as well as to situation, shape, &c.

This opinion is somewhat strengthened by the fore teeth in the lower jaw not being so subject to decay as those in the upper, although equally liable to all accidents arising from external influence, which could produce the disease in general.

The fore teeth in the lower jaw appear to be less subject to this disease than any of the others; the fore teeth in the upper jaw, and the grinders in both, are of course more frequently affected.

This disease and its consequences, seem to be peculiar to youth and middle age; the shedding teeth are as subject to it, if not more so, than those intended to last through life; and we seldom or ever see any person, whose teeth begin to rot after the age of fifty years.

This might be supposed to arise from the disproportion that the number of teeth after fifty bear to them before it; but the number of seased teeth after fifty do not bear the same proportion.

This disease has not hitherto been accounted for; if it had been always on the inside of the cavity, it might have been supposed to be owing to a deficiency of nourishment from some fault in the vascular system ; but as it begins most commonly externally, in a part where the teeth in their most sound state receive little or no nourishment, we cannot refer it to that cause.

It does not arise from any external injury, or from menstrua, which have a power of dissolving part of a tooth ; for any thing of that kind could not act so partially ; and we can observe in those teeth where disease has not gone deep, that from the black speck externally there is a gradual decay or alteration leading to the cavity, and becoming fainter and fainter. We may, therefore, reasonably suppose, that it is a disease arising originally in the tooth itself ; because when once the shell of the tooth has given way to the cavity, the cavity itself soon becomes diseased in the same way. That the disease spreads thus rapidly over the cavity, as soon as the tooth has given way, does not depend simply on the exposure ; for if a sound tooth be broken by accident, so as to expose the cavity, no such quick decay ensues : however, sometimes we find in those cases, that exposure of the cavity will produce a decay, and even pain, similar to an original disease ; and in the diseased tooth we find that the exposure has a considerable effect in hastening the progress of the disease ; for if the tooth be stopped so as to prevent its exposure to external injury, its cavity will not nearly so soon become diseased. Exposure therefore seems at least to assist the decay. (c.)

How far a rotten tooth has the power of contaminating those next to it, I believe, is not yet completely ascertained ; some cases seem

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(c.) As to the cause of caries, I published my opinion many years ago, first in London, and afterwards in this city, and have seen no cause to espouse a contrary opinion. I consider the immediate and exciting cause of dental decay, to be always external to the tooth itself, and to consist of certain corrosive menstrua, to which these organs are exposed from bodily disease, improper aliments, powerful medicines, and the thousand other sources of acrid filth and destructive poisons that become concentrated in the mouth and deposited upon the teeth. These procuring causes of caries may indeed derive their origin from constitutional diseases acting upon the system at various periods of life, but whatever internal defect of structure a tooth may derive from original organization, how much soever it may be predisposed to take a diseased action under favorable conditions, still, the tooth never decays till externally affected by putrescent, or corrosive, or disorganizing matter, which breaks up its structure.

That such has been my uniform opinion, will be seen from the following extract from the work on the stomach and digestive organs, published by Thomas Hare, Fellow of the Royal College of Surgeons in London, in 1821.

" The theories concerning the cause of decay in the teeth, which seem to have met most attention, are those referring it to an undue degree of compression exerted by their lateral surfaces on each other, and to a putrefactive fermentation of extraneous matter lodging in their interstices. The former has been ably set forth by Mr. Bell, of St. Thomas's Hospital, in the Medico-chirurgical Transactions ; the latter was published about two years ago, by Mr. Parmly." (Page 269.)

to favour this idea, and many to contradict it. We frequently see two teeth rotten in places exactly opposite to each other, and as one of them began first to decay, it gives a suspicion that the last diseased was infected by that which received the first morbid impression.

On the contrary, we often see one diseased, whilst another tooth, in contact with the decayed part, remains perfectly sound.

SYMPTOMS OF INFLAMMATION.

Few or no symptoms are produced by this disease besides the above appearances, till the cavity of the tooth is exposed; however, it often happens, that a tenderness, or a soreness upon touch, or other external influences, takes place long before; but when the cavity is exposed, then pain and other symptoms often begin, which are generally very considerable: however, the exposure of the cavity of a tooth, does not in all cases give pain. Some teeth shall moulder wholly away, without ever having any sensation.

In many cases, there will be acute pain upon the cavity being exposed, which will subside, and recur again, without producing any other effect; but it more frequently happens, that this pain is the first symptom of inflammation, and is in most cases very considerable; more so than that arising from such an inflammation in other places. The surrounding parts sympathize commonly to a considerable extent, viz. the gums, jaw bones, and integuments covering them; they inflame and swell so much as to affect the whole of that side of the face, where the affected tooth is situated. The mouth can hardly be opened; the glands of that side of the neck often swell; there is an increase of the saliva, and the eye is almost closed; the tooth not giving way to the swelling of the soft parts within it: and for this reason the local effects of the inflammation cannot be so visible as in the soft parts.

This inflammation of the tooth often lasts a considerable time, and then gradually subsides. We may suppose, according to the general law of inflammation, that it is at first of the adhesive kind, and accordingly we sometimes find the teeth swelled at their ends, which is a character of the adhesive stage of inflammation; and sometimes two fangs are grown together. That we seldom find adhesions between the teeth and surrounding parts may be reasonably imputed to their less aptitude for such connections. The suppurative inflammation succeeds; but as a tooth has not the power of suppuration which leads to granulations, so as to be buried, covered up, and made part of ourselves, as happens to other bones, (which would destroy any use of a tooth) the inflammation wears out, or rather the parts not being susceptible of this irritation, beyond a certain time, the inflammation gradually goes off, and leaves the tooth in its original diseased state. No permanent cure therefore can possibly be effected by such inflammations, but the parts being left in the same state as before, they are still subject to repetitions of inflammation, till some change takes place, preventing future attacks, which I believe is generally, if not always, effected by the destruction of those parts which are the seat of it, viz: the soft parts within the tooth.

Nature seems, in some measure, to have considered the teeth as aliens, only giving them nourishment while sound and fit for service, but not allowing them when diseased the common benefits of that society in which they are placed. They cannot exfoliate, as no operations go on in them except growth: therefore, if any part is dead, the living has not the power of throwing it off, and forming an external surface capable of supporting itself, like the other parts of the body: indeed, if they had such a power, no good purpose could be answered by it; for a peice of tooth, simply dead, is almost as useful as if the whole was living; which may be observed every day.

The pain, however, appears to take its rise from the tooth as a centre. That it should be more severe than what is generally produced by similar inflammations in other parts of the body, may, perhaps, be accounted for, when we consider, that these parts do not readily yield; as is likewise the case in whitloes.

It sometimes happens, that the mind is not directed to the real seat of the disease, the sensation of pain not seeming to be in the diseased tooth, but in some neighboring tooth, which is perfectly sound. This has often misled operators, and the sympathising tooth has fallen a sacrifice to their ignorance.

In all cases of diseased teeth, the pain is brought on by circumstances unconnected with the disease; as for instance cold, wherefore they are more troublesome commonly in winter than in summer. Extraneous matter entering the cavity, and touching the nerve and vessels, will also bring on the pain.

This pain is frequently observed to be periodical; sometimes there being a perfect intermission, sometimes only an abatement of it. The paroxysm comes on once in twenty-four hours; and, for the most part, towards the evening. The bark has therefore been tried; but that failing, the disorder has been suspected to be of the rheumatic kind, and treated accordingly with no better success. At length, after a more particular examination of the teeth, one of them has been suspected to be unsound; and being extracted, has put an end to the disorder. This shews how injudicious it is to give medicines in such cases, while the true state of the tooth is unknown.

This disease is often the cause of bad breath, more so than any other disease of those parts; especially when it has exposed the cavity of the tooth. This most probably arises from the rotten part of the tooth, and the juices of the mouth, and food, all stagnating in this hollow part, which is warm, and hastens putrefaction in them.

I come now to the prevention and cure of this disease.

The first thing to be considered, is, the cure of the decaying state of the tooth, or rather the means of preventing the farther progress of the decay; and more especially before it hath reached the cavity, whereby the tooth may be in some degree preserved; the consequent pain and inflammation, commonly called tooth ache, avoided, and often the consequent abscesses called gum boils. I believe, however, that no such means of absolute prevention are as yet known. The progress of the disease, in some cases, appears to have been retarded, by removing that part which is already decayed ; but experience shews, that there is but little dependence upon this practice. I have known cases, where the black spot having been filed off and scooped entirely out, the decay has stopped for many years. This practice is supposed to prevent at least any effect, that the part already rotten may have upon the sounder parts; however, if this is all the good that arises from this practice, I believe, in most cases, it might be as well omitted. Even if it were an effectual practice, it could not be an universal one ; for it is not always in the power of the operator to remove this decayed part, either on account of its situation, or on account of its having made too great a progress, before it is discovered. When it is on the basis of a grinder, or on the posterior side of its neck, it can scarcely be reached. It becomes also impracticable, when the disease is still allowed to go on, and the cavity becomes exposed, so that the patient is now liable to all the consequences already described, and the tooth is making haste towards a total decay ; in such a case, if the decay be not too far advanced, that is, if it be not rendered useless simply as a tooth I would advise that it be extracted ; then immediately boiled, with a view to make it perfectly clean, and also destroy any life there may be in the tooth ; and then that it be restored to the socket : this will prevent any farther decay of the tooth, as it is now dead, and not to be acted upon by any disease, but can only suffer chemically or mechanically. (D.)

This practice, however, I would only recommend in grinders, where we have no other resource on account of the number of fangs, as will be more fully explained hereafter. This practice has sometimes been followed with success ; and when it does succeed, it answers the same end as the burning the nerve, but with much greater certainty.

If the patient will not submit to have the tooth drawn, the nerve may be burned: that this may have the desired effect, it must be done to the very point of the fang, which is not always possible. (E.)

(D.) It is almost always in the power of a skilful operator to preserve any tooth from future decay, wherever the disease may be situated, either by stopping, or by a judicious removal of the part diseased : provided he has an opportunity of doing so before the decay has reached the internal cavity of the tooth. In relation to the absurdity of boiling teeth and returning them to their sockets, in the present improved state of dental knowledge, it is unnecessary to make any remarks.

(E.) For destroying nerves, it is now ascertained that cold iron is equally as good as hot, and a hickory sliver, properly shaped, better than either, inasmuch as it will follow the cavity better, excepting in those cases where the nerve cannot be destroyed by mechanical means. Among chemical agents I have found a mixture of equal parts of the white oxide of arsenic (arsenious acid,) and morphine made into a paste, with six times their bulk of conserve of roses to be perfectly effectual when applied carefully to the nerve. Mr. Spooner of this city, in his treatise on the teeth, had the credit of introducing this remedy to the notice of the profession. It has been tried for some years, by many of the first dentists in

Either of the concentrated acids, such as those of vitriol, nitre, or sea salt, introduced as far into the fang of the tooth as possible, is capable of destroying its soft parts, which most probably are the seat of pain; a little caustic alkali will produce the same effect. But it is a difficult operation to introduce any of these substances into the root of the fang, till the decay has gone a considerable length, especially, if it be a tooth of the upper jaw; for it is hardly possible to make fluids pass against their own gravity; in these cases, the common caustic is the best application, as it is a solid. The caustic should be introduced with a small dossil of lint, but even this will scarcely convey it far enough. If it be the lower jaw, the caustic need only be introduced into the hollow of the tooth, for by its becoming fluid, by the moisture of the part, it will then descend down the cavity of the fang, as will also any of the acids; but patients will often not suffer this to be done, till they have endured much pain, and several inflammations.

When there is no other symptom except pain in the tooth, we have many modes of treatment recommended, which can only be temporary in their effects. These act by derivation, or stimulus applied to some other part of the body. Thus to burn the ear by hot irons, has sometimes been a successful practice, and has relieved the tooth ache.

Some stimulating medicine, as spirit of lavender, snuffed up into the nose, will often carry off the pain.

When an inflammation takes place in the surrounding parts, it often is assisted by an additional cause, as cold, or fever: when the inflammation hath taken place in a great degree, then it becomes more the object of another consideration; for it may be lessened like any other inflammation arising from similar causes, the pressure of an extraneous body, or exposure of an internal cavity.

If the inflammation be very great, it will be proper to take away some blood. The patient may likewise properly be advised to hold some strong vinous spirit for a considerable time, in his mouth. Diluted acid, as vinegar, &c. may likewise be of use, applied in the same manner. Likewise, preparations of lead would be advisable; but these might prove dangerous, if they should be accidentally swallowed.

If the skin is affected, poultices, containing some of the above mentioned substances, produce relief. The pain, in many cases, being often more than the patient can well bear, warm applications to the part have been recommended, such as hot brandy, to divert the mind; also spices, essential oils, &c. which last are, perhaps, the best. A little lint or cotton soaked in laudanum, is often applied with success; and laudanum ought likewise to be taken internally, to pro-

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the country with uniform success, and cannot be too strongly recommended to the profession. Great care should always be taken to secure it in the cavity and prevent its absorption by the fluids of the mouth. It is Doctor Flagg's opinion, who first persuaded me to use this remedy, that the arsenic is rendered still more effectual when used in connexion with a drop of kreosote.

cure an interval of some ease. Blisters are of service in most inflammations of these parts, whether they arise from a diseased tooth or not. They cannot be applied to the part, but they divert the pain, and draw this stimulus to another part: they may be conveniently placed behind the ear, or in the nape of the neck. These last mentioned methods can only be considered as temporary means of relief, and such as only affect the inflammation. Therefore the tooth is still exposed to future attacks of the same disease.

STOPPING OF THE TEETH.

If the destruction of the life of the tooth, either by drawing and restoring it again, or by the actual or potential cauteries, has not been effected, and only the cure of the inflammation has been attempted, another method of preventing inflammation is to be followed, which is to allow as little stimulus to take place as possible. The cavity of the tooth not being capable of taking the alarm like most other cavities in the body, and of course not suppurating, as has been already observed, often no more is necessary, either to prevent the inflammation from taking place altogether, or extending farther, than to exclude all extraneous irritating matter; therefore the stopping up the cavity becomes, in many cases, the means of preventing future attacks of the inflammation, and often retards even the progress of the disease, that is, the farther decay of the tooth, so that many people go on for years thus assisted: but it is a method which must be put in practice early, otherwise it cannot be continued long; for, if the disease has done considerable damage to the inside of the tooth, so as to have weakened it much, the whole body of the tooth, most probably, will soon give way in mastication: therefore, under such circumstances, the patient must be cautioned, not to make too free with the tooth in eating.

Gold and lead are the metals generally made use of for stopping teeth. Gold being less pliable, must be used in the leaf; lead is so soft in any form, as to take on any shape by a very small force.

Stuffiing the hollow tooth with wax, galbanum, &c. can be but of very little service, as it is in most cases impossible to confine these substances, or preserve them from being soon worn away; however they have their uses, as it is a practice which the patients themselves can easily put in execution.

It often happens from neglect, and much oftener in spite of all the means that can be used, that the tooth becomes so hollow, as to give way, whereby the passage becomes too large to keep in any of the abovementioned substances; however, in this case, it sometimes happens, that a considerable part of the body of the tooth will still stand, and then a small hole may be drilled through this part, and after the cavity has been well stopped, a small peg may be put into the hole, so as to keep in the lead, gold, &c. But when this cannot be done, we may consider the broken tooth as entirely useless, or at least it will soon be so; and it is now open to attacks of inflammation, which the patient must either bear, or submit to have the tooth pulled out. If the first be chosen, and the repeated inflammations submitted to, a cure will be performed in time, by the stump becoming totally dead ; but it is better to have it pulled out, and suffer once for all.

Upon pulling out these teeth, we may in general observe a pulpy substance at the root of the fang, so firmly adhering to the fang, as to be pulled out with it. This is in some pretty large, so as to have made a considerable cavity at the bottom of the socket. This substance is the first beginning of the formation of a gum boil, as it at times inflames and suppurates. (F.)

(F.) Stopping teeth I consider the most important operation performed by the dentist; because, when effectually done, teeth are preserved in a perfectly healthy and living condition, not merely for a few years, but for the period of a long life. It is to be regretted, that dentists generally have paid too little attention to this operation, as there are but few in proportion to the whole number of operators on the teeth, who perform it well, of which the public generally do not seem to be aware, making no distinction between teeth that are filled well and those that are filled badly. The latter of course, soon fail, and then the whole profession are made to suffer from remarks like the following :—" Stopping teeth is of no use. I have had mine filled and paid a high price for it, but the stoppings all came out." In this way thousands of valuable teeth are lost—the whole operation brought into disrepute, and the whole profession made to suffer by unskilful operators and ignorant pretenders in this useful branch of the art.

For this operation, gold is the only substance known that can be permanently relied on ; although there are cases in which tin and even lead may be of temporary advantage when employed with skill and judgment. I regard cements, (pastes) fusible metals, amalgams, succedaneums, and all other substitutes for the above named metals, as impositions on the public, never having seen a single operation, in which these substances were employed, which would not have been more permanent if even lead, the poorest of the above named metals, had been used ; because it is less subject to decomposition and oxidation, to say nothing of the poisonous qualities of the mercury, which most of the others contain.

I have never known a perfect master of the art of stopping teeth, either to employ or recommend the substances which I here condemn ; and I believe the use of them is almost wholly confined to those persons who are unacquainted with this nice and difficult art. Gold should be employed in all cases where it is practicable ; but there are instances, in consequence of peculiar forms of cavities, in which tin or lead being softer, will adhere to the cavity, and for a time perform important uses. Mr. Thomas Bell of London, (and we can have no higher authority,) has the following remarks on this subject which correspond so well with my own experience, that it gives me pleasure to append them to this note for the benefit of our readers.—And I with confidence assert, that I could obtain the names of all the first dentists in Europe and in this country in corroboration of the above.

" The operation of filling the teeth is much better understood in the present day than it was at the time when the foregoing directions were written. Notwithstanding the numerous experiments which have been made, and the innumerable quack nostrums which have been introduced to the public with promises which from their universality ought at once to be disbelieved, there is still no method of filling teeth with success where the pulp is exposed, and no substance which for durability and comfort can be compared to pure gold. All the amalgams, pastes, cements, or fusible metallic compositions, some of them ingenious and plausible, have insuperable disadvantages. It is not meant that they may not in some few cases partially succeed where a tooth will not bear the pressure ne-

SECTION. II.

THE DECAY OF THE TEETH BY DENUDATION.

There is another decay of the teeth much less common than that already described, which has a very singular appearance. It is a wasting of the substance of the tooth very different from the former. In all the instances I have seen, it has begun on the exterior surface of the tooth, pretty close to the arch of the gum. The first appearance is a want of enamel, whereby the bony part is left exposed, but neither the enamel, nor the bony part alter in consistence as in the above described decay. As this decay spreads, more and more of the bone becomes exposed, in which respect also it differs from the former decay; and hence it may be called a denuding process. The bony substance of the teeth also gives way, and the whole wasted surface has exactly the appearance, as if the tooth had been filed with a rounded file, and afterwards had been finely polished. At these places the bony parts, being exposed, become brown.

I have seen instances, where it appeared as if the outer surface of the bony part,which is in contact with the inner surface of the enamel, had first been lost, so that the attraction of cohesion between the two had been destroyed: and as if the enamel had been separated for want of support, for it terminated all at once.

In one case, the two first incisors had lost the whole of the enamel; on their anterior surfaces, they were hollowed from side to side, as if a round file had been applied to them longitudinally, and had the finest polish imaginable. The three grinders on each side appeared as if a round file had been used on them, in a contrary direction to that on the incisors, viz: across their bodies close to the gum, so that there was a groove running across their bodies, which was smooth in the highest degree. Some of the other teeth in the same jaw had begun to decay in a similar manner; also the teeth in the lower jaw were become diseased.

I saw a case very lately, where the four incisors of the upper jaw had lost their enamel entirely on their anterior surfaces, and there was scarcely a tooth in the mouth, which had not the appearance of having had a file applied across it close to the gum.

Those whom I have known, have not been able to attribute this disease to any cause; none of them had ever done any thing particu-

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cessary to render the gold sufficiently firm and solid, but in almost all cases where these are available gold would be much more so.

In order to employ this method of retarding or preventing the progress of decay with the greatest effect, the pulp must not have been exposed. In fact the operation should be had recourse to as soon as the enamel has given away, or even earlier, and the decayed part can be drilled out of the tooth. When it has gone still further, the decayed portion must be entirely removed by means of little instruments adapted to this purpose, and the cavity being made perfectly dry, the gold, beaten of a proper thickness, is to be carefully pressed into the cavity until it is completely and solidly filled."

lar to the teeth, nor was there in appearance any thing particular in the constitution, which could give rise to such a disease. In the first of these cases, the person was about forty: in the last, about twenty years of age.

From its attacking certain teeth rather than others, in the same head, and a particular part of the tooth, I suspect it to be an original disease of the tooth itself; and not to depend on accident, way of life, constitution, or any particular management of the tooth. (G.)

SECTION III.

SWELLING OF THE FANG.

Another disease of the teeth, is a swelling of the fang, which most probably arises from inflammation, while the body continues sound, and is of that kind which in any other bone would be called a Spina Ventosa. It gives considerable pain, and nothing can be seen externally.

The pain may either be in the tooth itself, or the alveolar process as it is obliged to give way to the increase of the fang.

As a swelling of this kind does not tend to the suppurative inflammation, and as I have not been able to distinguish its symptoms from those of the nervous tooth-ache, it becomes a matter of some difficulty to the operator; for the only cure yet known is the extraction of the tooth; which has been often neglected on a supposition that the pain has been nervous.

These diseases of the teeth, arising from inflammation, become often the cause of diseases in the alveolar processes, and gums, which I shall proceed to describe.*

(G.) That Mr. Hunter has mistaken the cause of this denuding process, is evident from the following fact, which seems to indicate that this disease results from the condition of the fluids of the mouth.

I have seen many examples in which artificial human teeth have suffered this denuding process exactly in the same manner as the original teeth in the same mouth. But the following instance seems to settle the question beyond all doubt. A gentleman who had lost his teeth, partly from this cause, came to us about four years ago from a considerable distance, to procure artificial substitutes. A set of human teeth of the best quality were accordingly provided, which, in the course of three years and a half, on his return to us, were found to be grooved from the surface to the central cavity.

*The affection here described is nothing more than a deposit of bony matter around the fang, produced, doubtless, by inflammation of the periosteum. The new bone is rather yellower and less opaque than the original structure. Hunter has alluded here to the occurrence of nervous pains, produced by these cases. It appears probable that the pressure of the new bone upon the nerves of the periosteum of the alveolus, or of the alveolar process itself, is the cause of this pain, for it cannot be distinguished from local neuralgia produced by any other similar cause. Cases of this description are detailed by Fox and myself, in which the only method by which the true seat of pain could be ascertained was by striking the affected tooth, by which pain was produced; and the extraction of the tooth at once exhibited the cause of the pain and effected its cure. THOMAS BELL.

SECTION IV.

GUM BOILS.

Although suppuration cannot easily take place within the cavity of a tooth, yet it often happens, that the inflammation, which is extended beyond it, is so great, as to produce suppuration in the jaw at the bottom of the socket, where the diseased tooth is, forming there a small abscess, commonly called a gum boil.

This inflammation is often very considerable, especially when the first suppuration takes place. It is often more diffused than inflammations in other parts, and affects the whole face, &c.

The matter, as in all other abscesses, makes its own way outwards, and as it cannot be evacuated through the tooth, it destroys the alveolar processes, and tumifies the gum, generally on the fore part, either pointing directly at the root of the tooth, or separating the gum from it; and is evacuated in one or the other of these two ways, seldom on the inside of the gum; however, this sometimes happens.

Gum boils seldom arise from other causes; however, it sometimes happens that they originate from a disease in the socket or jaw, having no connexion with the tooth, and only affecting it secondarily. Upon drawing such teeth, they are generally found diseased at or near the point, being there very rough and irregular, similar to ulcerating bones. There is no disease to appearance in the body of the tooth. These last described gum boils may arise wholly from such a cause, the appearance on the fang of the tooth being only an effect.

These abscesses, whether arising from the teeth or the sockets; always destroy the alveolar processes on that side where they open; as it is very evident in the jaw bones of many sculls; on which account the tooth becomes more or less loose. It may be perceived in the living body: for when the alveolar process is entirely destroyed on the outside of the tooth, if that tooth be moved, the motion will be observed under the gum, along the whole length of the fang.

So far the teeth, alveolar processes and gums become diseased by consent.

It is common for these abscesses to skin over, and in all appearance, heal. This is peculiar to those which open through the gums, but those which discharge themselves between the gums and teeth, can never heal up, because the gum cannot unite with the tooth; however, the discharge in them becomes less at times, from a subsiding of the suppuration; which indeed is what allows the other to skin over. But either exposure to cold, or some other accidental cause, occasioning a fresh inflammation, produces an increased suppuration, which either opens the old orifice in the gum, or augments the discharge by the side of the tooth; however, I believe the inflammation in this last case is not so violent as in the other, where a fresh ulceration is necessary for the passage of the matter.

Thus a gum boil goes on for years, healing and opening alternately; the effect of which is, that the alveolar processes are at length absorbed, and the tooth gets looser and looser, till it either drops out, or is extracted.

Most probably in all such cases, the communication between the cavity of the tooth and the jaw, is cut off; yet it keeps in part its latteral attachments, especially when the gum grasps the tooth; but in those cases, where the matter passes between the gum and the tooth, these attachments are less; but some of them are still retained, particularly on the side opposite to the passage for the matter.

Gum boils are easily known. Those which open through the gum may be distinguished by a small rising between the arch of the gum, and the attachment of the lip; upon pressing the gum at the side of this point, some matter will commonly be observed, oozing out at the eminence. This eminence seldom subsides entirely; for even when there is no discharge, and the opening is healed over, a small rising may still be perceived, which shews that the gum boil has been there.

Those gum boils which discharge themselves between the gum and the tooth, are always discovered by pressing the gum, whereby the matter is pressed out, and is seen lying in the angle between the gum and tooth.

These abscesses happen much more frequently in the upper jaw, than in the lower, and also more frequently to the *cuspidati*, *incisores*, and *bicuspides* in that jaw, than to the *molares;* seldom to the fore teeth in the lower jaw.

As gum boils are in general the consequence of rotten teeth, we find them in young and middle aged people more frequently than in old; but they appear to be most common to the shedding teeth. This will arise from those teeth being more liable to become rotten; and perhaps there may be another reason, viz: the process of ulceration which goes on in these teeth, in some cases falling into suppuration.

It sometimes happens in these gum boils, that a fungus will push out at the orifice, from a luxuriant disposition to form granulations, in the inside of the abcess, and the want of power[*] to heal or skin; the same thing frequently happens in issues, where the parts have a disposition to granulate, but have not the power of healing, on account of an extraneous body being kept there. The tooth in the present case acts as an extraneous body, and by the secretion of matter the abscess is prevented from healing.

In the treatment of gum boils, the practice will be the same, whether the abscess has arisen from a diseased tooth, or a disease in the socket.

The teeth being under such circumstances in the animal machine, that they cannot partake of all the benefits of a cure in the same manner as other parts do; on that account, when an abcess forms itself about the root of a tooth, the tooth by losing its connexion with the other parts, loses every power of union, as it is not endowed with the power of granulating, and thereby it becomes an extraneous body, or at least acts here as an extraneous body, and one of the worst kind, such as it is not in the power of any operation of the machine to get rid of. This is not the case with any other part of the body, for when any other part becomes dead, the machine has the power of separating it from the living, called sloughing or exfoliation, and expelling it, whence a cure is effected; but in the case of gum boils, the only cure of them is the extraction of the tooth. As this is the last resource, every thing is to be done to make the parts as easy under the disease as possible, so that this operation may be postponed.

When the abscess has opened through the gum, I believe the best method that can be tried with a view to prevent future gatherings, is to prevent the closing up of the abscess; and this may be done by enlarging the opening, and keeping it enlarged, till the whole internal surface of the cavity of the abscess is skinned over, or till the opening in the gum loses the disposition to close up, which will, in a great measure, prevent any future formation of matter; or at least whatever is formed will find an easy outlet, which will prevent these accumulations from taking place ever after. The end of the fang will indeed be hereby exposed; but under such circumstances it will not be in a worse situation than when soaked in matter.

One method of doing this is to open the gum boils by a crucial incision, the full width of the abscess, and fill it well with lint, which should be dipped in lime water, or a diluted solution of lunar caustic; made by dissolving one drachm of the caustic in two ounces of distilled water; and the wound should be dressed very frequently, as it is with difficulty that the dressing can be kept in. If this is not sufficient to keep the wound open, it may be touched with the lunar caustic, so as to produce a slough; and this may be repeated, if it should be found necessary.

One considerable disadvantage occurs in this practice, which is the difficulty of keeping on the dressings; but constant attention will make up for the inconvenience of situation.

If the surface of the abscess be touched with the lapis septicus, and the lip kept from coming in contact with the part for one minute, it answers better than any other method; for this, within that space of time, will penetrate to the bottom.

The surface of the boil should be first wiped dry, as much as the nature of the part will allow, to prevent as much as possible the spreading of the caustic; which by care can be prevented, as the operator will watch it the whole time.

To extract the tooth, then to file off any diseased part of it, and immediately to replace it, has been practiced, but often without the desired success; for it has often happened, that a tooth has been introduced into a diseased jaw. This practice, however, has now and then succeeded.

When a gum boil is formed on a back tooth, or *molaris*, such very nice treatment is not necessary, as when it happens to the fore teeth; because, appearances are there of less consequence; therefore, the gum may be slit down upon the fang through its whole length, from the opening of the gum boil to its edge, which will prevent any future union; and the whole cavity of the abscess, skinning over, will prevent any future collection of matter. The wound appears afterwards like the hair lip, and therefore this practice is not advisable where it would be much in view; as when the disease is in the fore teeth. In these cases, where the granulations push out through the small opening, they may be cured by the method above mentioned; but if it is not complied with, they may be very safely cut off with a knife or lancet. However, this does not effect a cure; for they commonly rise again. To slit the gum, in this case has been common, but it is a bad method whenever the defect is in sight.*

SECTION V.

EXCRESENCES FROM THE GUM.

From bad teeth there are also sometimes excresences, arising at once out of the gum; near, or in contact with the diseased tooth.

In general they are easily extracted with a knife, or whatever cutting instrument can be best applied; but this will vary according to their situations, and the extent of their base.

They will often rise in a day or two after the operation as high as ever; but this newly generated matter generally dies soon, and the disease terminates well. They have often so much of a cancerous appearance, as to deter surgeons from meddling with them; but where they arise at once from the gum, and appear to be the only diseased part, I believe they have no malignant disposition.

However, I have seen them with very broad bases, and where the whole could not be removed, and yet no bad consequences have attended their removal. These often rise again in a few years, by which means they become very troublesome.

After the extirpation of them, it is often necessary to apply the actual cautery to stop the bleeding; for arteries going to increased parts are themselves increased, and also become diseased; and have not the contractile power of a sound artery.†

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* The practical surgeon who has seen much of the diseases of the teeth will see that the long detail of the treatment of gum-boils, or, as it may with more pro-propriety be termed, alveolar abscess, is altogether supererogatory. The roots occasioning these gum-boils *must* be removed, or every other means will fail.

THOMAS BELL.

† Whenever the tumours here described are produced by the irritation arising from diseased or dead teeth, they will constantly recur after removal, until the cause is removed by the extraction of the teeth; and it often happens that after this operation they disappear spontaneously. It is not uncommon for a tumour of this description so completely to conceal the stump that has occasioned its growth, that it is only by the excision of the tumour that the cause can be ascertained. It is therefore necessary in all cases of this description that a root should be carefully searched for after the removal of such a tumour. T. B.

SECTION VI.

DEEPLY SEATED ABSCESSES IN THE JAWS.

Sometimes deeper abscesses occur than those commonly called gum boils. They are often of very serious consequences, producing carious bones, &c. These commonly arise from a disease in the tooth, and more especially in the cuspidati; those teeth passing farther into the jaw than the others. Their depth in the jaw being beyond the attachment of the lip to the gum, if an abscess forms at their points, it more readily makes its way through the common integuments of the face, than between the gum and lip, which disfigures the face; and when in the lower jaw, looks like the evil.

In the upper jaw it makes a disagreeable scar on the face about half an inch from the nose.

These, although they may sometimes arise from diseases of the teeth and gums, yet are properly the object of common surgery; and the surgeon must apply to the dentist, if his assistance is necessary, to pull out the tooth, or to perform any other operation which comes under his province.

It sometimes happens that the abscess is situated some way from the root of the diseased tooth, both in the upper jaw and the lower; but, I think, more frequently in the lower. When it threatens to open externally on the skin of the face, great care should be taken to prevent it, and an opening very early made into the swelling on the inside of the lip; for it is generally very readily felt there. This practice of early opening these abscesses upon the inside of the mouth is more necessary, when the abscess is in the lower jaw, than when in the upper; because matter by its weight always produces ulceration more readily at the lower part. I have seen this practice answer, even when the matter had come so near the skin, as to have inflamed it. If it is in the upper, the opening need not be so very large; as the matter will have a depending outlet.

To prevent a relapse of the disease, it will in most cases be necessary to pull out the tooth; which has either been the first cause, or has become diseased, in consequence of the formation of the abscess; and in either case is capable of re-producing the disease.

The mouth should be often washed; and while the water is within the mouth, the skin should be pressed opposite to the abscess.

If the life of the bone be destroyed, it will exfoliate; and very probably two or three of the teeth may come away with the exfoliation. Little should be done in such cases, except that the patient should keep the mouth as clean as possible by frequently washing it, and when the bones exfoliate, they should be removed as soon as possible. In these cases it is but too common for the Dentist to be very busy, and perhaps do mischief through ignorance.

SECTION VII.

ABSCESS OF THE ANTRUM MAXILLARE.

The *Antrum Maxillare* is very subject to inflammation and suppuration, by means of diseases of the neighboring parts, and particularly of the duct leading to the nose being obliterated. Whether this is the cause, or only an effect, is not easily determined, but there is great reason to suppose it an attendant, from some of the symptoms. If it be a cause, we may suppose, that the natural mucus of these cavities accumulating, irritates and produces inflammation for its own exit; in the same manner as an obstruction to the passage of the tears through the *ductus ad nasum*, produces an abscess of the *lacbrymal sac.*

This inflammation of the *Antrum* gives a pain which will be at the first taken for the tooth-ache, especially if there be a bad tooth in that side; however, in these cases, the nose is more affected than commonly in a tooth-ache.

The eye is also affected; and it is very common for people with such a disease to have a severe pain in the forehead where the frontal sinuses are placed; but still the symptoms are not sufficient to distinguish the disease. Time must disclose the true cause of the pain; for it will commonly continue longer than that which arises from a diseased tooth, and will become more and more severe; after which a redness will be observed on the fore part of the cheek, somewhat higher than the roots of the teeth, and a hardness in the same place, which will be considerably circumscribed. This hardness may be felt rather highly situated on the inside of the lip.

As this disease has been often treated of by surgeons, I shall only make the following remarks concerning it.

The first part of the cure, as well as of that of all other abscesses, is to make an opening, but not in the part where it threatens to point; for that would generally be through the skin of the cheek.

If the disease is known early, before it has caused the destruction of the fore part of the bone, there are two ways of opening the abscess: one by perforating the partition between the antrum and the nose, which may be done; and the other by drawing the first or second grinder of that side, and perforating the partition between the root of the alveolar process and the antrum, so that the matter may be discharged for the future that way.

But if the fore part of the bone has been destroyed, an opening may be made on the inside of the lip, where the abscess most probably will be felt; but this will be more apt than the other perforation to heal, and thereby may occasion a new accumulation; which is to be avoided, if possible, by putting in practice all the common methods of preventing openings from healing or closing up; but this practice will rather prove troublesome; therefore the drawing the tooth is to be preferred, because it is not so liable to this objection.

CHAPTER II.

OF THE DISEASES OF THE ALVEOLAR PROCESSES, AND THE CONSEQUENCES OF THEM.

Having thus far treated of the diseases of the teeth themselves, and those of the sockets and gums, which either arise from them, or are similar to such as arise from them, I come now to consider the diseases which take place primarily in the sockets, when the teeth are perfectly sound: these appear to be two; and yet I am not sure but that they are both fundamentally the same, proceeding together from the same cause, or one depending on the other.

The first effect, which takes place, is a wasting of the alveolar processes, which are in many people gradually absorbed, and taken into the system. This wasting begins first at the edge of the socket, and gradually goes on to the root or bottom.

The gum, which is supported by the alveolar process, loses its connexion, and recedes from the body of the tooth, in proportion as the socket is lost; in consequence of which, first the neck, and then more or less of the fang itself, becomes exposed. The tooth of course becomes extremely loose, and at last drops out.

The other effect is a filling up of the socket at the bottom, whereby the tooth is gradually pushed out. As this disease seldom happens without being attended by the other, it is most probable that they generally both arise from the same cause. The second in these cases may be an effect of the first. Both combine to hasten the loss of the tooth; but it sometimes happens that they act separately: for I have seen cases where the gum was leaving the teeth, and yet the tooth was not in the least protruded; on the other hand, I have seen cases, where the tooth was protruding, and yet the gum kept its breadth; but where this is not the case and the gums give way, the gums generally become extremely diseased; and as they are separated from both the teeth and the alveolar process, there is a very considerable discharge of matter from those detached surfaces.

Though the wasting of the alveoli at their mouths, and the filling up at their bottoms, are to be considered as diseases, when they happen early in life; yet it would appear to be only on account of a natural effect taking place too soon; for the same thing is very common in old age: and also, as this process of filling up the bottom, and wasting of the mouths of the alveolar processes, takes place in all ages, where a tooth has been drawn, and the connexion between the two parts is destroyed, this might lead us to suspect, the original cause of these diseases may be a want of that perfect harmony, which is required between the tooth and socket, whereby a stimulus may be given in some degree similar to the loss of a tooth; and by destroying that stimulus upon which the absorption of the process and the filling up of the socket depend, the natural disposition may be restored. This last opinion is strengthened by the following case.

One of the first incisores of the upper jaw of a young lady was gradually falling lower and lower. She was desirous of having a tooth transplanted, which might better fit the shallow socket, as it was now become: she consulted me: I objected to this, fearing that the same disposition might still continue; in which case the new tooth would be probably pushed out in about half a year; that the time since the old one began to sink, and a relief of so short a continuance, would be all the advantage gained by the operation; but I observed at the same time, that the operation might have the effect of destroying the disposition to filling up, so that the new tooth might keep its ground. This idea turned the balance in favour of the operation; and it was performed. Time shewed that the reasoning was just: the tooth fastened; and has kept its situation for some years.

These diseases arise often from visible causes. Any thing that occasions a considerable and long continued inflammation in those parts, such paticularly as a salivation, will produce the same effect. The scurvy also, when carried to a great height attacks the gums, and the alveolar processes, which becomes a cause of the dissolution of those parts. This is the most remarkable in the scurvy at sea.

When the disease arises from these two last causes, the gums are either affected with the same disease, together with the alveolar processes, or they sympathize with them. They swell, become soft and tender; and, upon the least pressure or friction, bleed very freely.

How far these diseases can be prevented and cured, is, I believe, not known.

The practice hath been principally to scarify the gums freely: and this with a view to fasten the teeth made loose by the disease, which has therefore generally made a considerable progress before even an attempt towards a cure has been made. This scarification has certainly a good effect in some cases, the teeth thereby becoming much faster; but how far the alveolar processes have been destroyed in such instances, cannot be determined. Perhaps, only a general fullness of the attaching membrane, between the tooth and the process, had taken place, as in a slight salivation, so as to push the tooth a little way out of the bony socket; which having subsided by the plentiful bleeding, the tooth of course becomes fast. Or perhaps, by producing an inflammation of another kind, the first inflammation, or disposition to inflame, is destroyed; which evidently appeared in the case of the young lady above mentioned.

If the above practice is unsuccessful, and the tooth continues to protrude, it will either become very troubelsome, or a great deformity. A fore tooth may not, indeed, be at first so troubelsome as a grinder; because these teeth frequently *overlap*; but it will be extremely disagreeable to the eye.

If the cause cannot be removed, the effect must be the object of our attention. To file down the projecting part is the only thing that can be done ; but care must be taken not to file into the cavity, otherwise pain, inflammation, and other bad consequences, may probably ensue.

This practice, however, will be very troublesome, because it will be difficult to file a loose tooth. At last the tooth will drop out, which will put an end to all farther trouble.

If the alveoli have really been destroyed, in those cases of loose teeth which have become firm again, it would be difficult to ascertain whether they have a power of renewing themselves, analagous to that power by which they first grow ; or whether the fastening be effected by a closing of the gum and process to the teeth. When the disease arises from the scurvy, the first attempt must be to cure that disease ; and afterwards the above local treatment may be of service.

Together with drawing blood from the gums, astringents have always been used to harden them. But when the disease does not arise from any constitutional cause, which may be removed, (such as the sea-scurvy or salivation) but from a disposition in the parts themselves, I have seen little relief given by them.

The tincture of myrrh, tincture of peruvian bark, and sea-water, are some of the applications which have been recommended.

In such cases I have seen considerable benefit from the use of the tincture of bark and laudanum, in the proportion of two parts of the tincture of bark to one of the laudanum ; and this to be used frequently, and at each time to be kept in the mouth during ten, fifteen, or twenty minutes.

CHAPTER III.

OF THE DISEASES OF THE GUMS, AND THE CONSEQUENCES OF THEM.

SECTION I.

The Scurvy in the Gums, (vulgarly so called.)

The gums are extremely subject to diseases, the symptoms of which, in an advanced state of them, are in general such as were described in the preceding chapter.

They swell, become extremely tender, and bleed upon every occasion; which circumstances being somewhat similar to those observable in the true scurvy, the disease has generally been called a scurvy in the gums.

But as this seems to be the principal way in which the gums are affected, I suspect, that the same symptoms may arise from various causes ; as I have often seen the same appearances in children evidently of a scrofulous habit ; and have also suspected them in grown people: they likewise frequently appear in persons, who are, in all other respects, perfectly healthy.

When the gums first begin to have a tenderness, we may observe it first on their edges: the common smooth skin of the gum is not continued to its very edge, but becomes at the edge a little rough like a border, and somewhat thickened. The part of the gum, between two teeth, swells, and often pushes out like luxuriant flesh, which is frequently very tender.

The inflammation is often carried so far as to make the gums ulcerate; so that the gums in many cases have a common ulcer upon them; by which process, a part of the teeth are denuded. This is often on one part only, often only on one jaw; while in some cases it is on the whole gums on both jaws.

In this case it often happens, that the alveolar process disappears, after the manner above described, by taking part in the inflammation, either from the same cause, or from sympathy. In such cases there is always a very considerable discharge of matter from the inside of the gum, and alveolar process, which always takes the course of the tooth for its exit.

In many of these cases we find, that while the gums are ulcerating in one part, they are swelling and becoming spongy in another, and hanging loose upon the teeth; and this often takes place, where there is no ulceration in any part.

The treatment, proper in this disease, where the gums become luxuriant, from a kind of tumefaction, is generally to cut away all the redundant swellings of the gum. I have seen several instances, where this has succeeded; but still I am inclined to think, that this is not the best practice; for it is not that an adventitious substance is thus removed, as in the cause of luxuriant granulation, from a sore, but a part of the gum itself is destroyed, in like manner as a part enlarged by inflammation may be reduced by the knife to its natural size; which would certainly be bad practice. I should suspect, that the good arising from such practice, is owing to the bleeding which takes place; especially as I have found from experience, that simply scarifying the gums has answered the same purpose. Where there are reasons for supposing it to arise from a peculiarity in the constitution, the treatment should be such as will remove this peculiarity.

If the constitution is scorbutic, it must be treated with a view to the original disease. If scrofulous, local treatment, by wounding the parts may do harm; but sea-bathing, and washing the mouth frequently with sea-water, are the most powerful means of cure that I know.

SECTION II.

CALLOUS THICKENING OF THE GUM.

The gums are also subject to other diseases, abstracted from their connexion with the alveoli and teeth; which do not wholly belong to our present subject.

A very common one is the thickening of the gum in some particular place, of a hard callous nature, similar to an excrescence. Many of these have a cancerous appearance, which deters the surgeon from meddling with them; but in general, without reason.

They may be often removed by the knife, but not always. The bleeding, which follows, is generally so considerable, that it is frequently necessary to apply the actual cautery.

They sometimes grow again, which subjects the patient to the same operation. I have known them extracted six times; but, in such cases, I suspect that they really have a cancerous disposition; at least, it has been so in two cases, which have fallen under my observation.

But here the skill of the surgeon, rather than that of the dentist, is required.

CHAPTER IV.

OF NERVOUS PAINS IN THE JAWS.

There is one disease of the jaws which seems in reality to have no connexion with the teeth, but of which the teeth are generally suspected to be the cause. This deserves to be taken notice of in this place, because operators have frequently been deceived by it, and even sound teeth have sometimes been extracted through an unfortunate mistake.

This pain is seated in some one part of the jaws. As simple pain demonstrates nothing, a tooth is often suspected, and is perhaps drawn out; but still the pain continues, with this difference however, that it now seems to be in the root of the next tooth: it is then supposed either by the patient or the operator, that the wrong tooth was extracted; wherefore, that in which the pain now seems to be, is drawn, but with as little benefit. I have known cases of this kind, where all the teeth of the affected side of the jaw, have been out, and the pain has continued in the jaw: in others, it has had a different effect, the sensation of pain has become more diffused, and has at last, attacked the corresponding side of the tongue. In the first case, I have known it recommended to cut down upon the jaw, and even to perforate and cauterise it, but all without effect.

Hence it should appear, that the pain, in question, does not arise from any disease in the part, but is entirely a nervous affection.

It is sometimes brought on, or increased, by affections of the mind, of which I once saw a remarkable instance in a young lady.

It often has its periods, and these are frequently very regular.

The regularity of its periods gives an idea of its being a proper case for the bark, which however frequently fails.

I have seen cases of some years standing, where the hemlock has succeeded, when the bark has had no effect; but sometimes all attempts prove unsuccessful. Sea bathing has been in some cases of singular service.*

CHAPTER V.

OF THE EXTRANEOUS MATTER UPON THE TEETH.

There are parts of the tooth, which lie out of the way of friction, viz. the angles made by two teeth, and the small indentation between the tooth and gum.

Into these places the juices are pressed and there stagnate, giving them at first the appearance of being stained or dirty. A tooth in this stage is generally clean for some way from its cutting edge, towards the gum, on account of the motion of the lips upon it, and the pressure of the food, &c. It is also pretty clean close to the gum, from the motion of the loose edge of the gum upon that part, but this circumstance is only observable in those who have their gums perfectly sound; for in others, this loose edge of the gum is either lost, or no longer retains its free motion.

If art be not now used, as the natural motion of the parts is not sufficient, the incrustation increasing covers more and more of the teeth. As mastication generally keeps that part clear which is near to the edges and grinding surfaces; and as the motion of the lips in some measure retards its growth outwards, it accumulates on the parts above mentioned, till it rises almost as high as the gum ; its growth being now retarded in that direction, it accumulates on the edge next to the gum, so that in time it passes over the gum, of which it covers a greater or less portion. When it has increased so much as to touch the gum, (which very soon happens, especially in the angle between the teeth) it produces ulceration of that part and a train of bad consequences. Often the gums receding from this matter, become very tender and subject to hemorrhage.

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* The disease here treated of is evidently that which has, since the time of Hunter, been so often treated of under the terms Neuralgia and Tic-douloureux. It is unnecessary here to say much on the subject of this disease when arising from constitutional causes, in which case, I believe, the periodical character will almost always distinguish it; but it may not be useless to offer a few observations on those cases of local neuralgia which are more or less connected with the teeth, and which more or less nearly stimulate tic-doloureux, especially when occurring in a constitution predisposed to that affection. It appears that the pressure of an extraneous body on the fibre of a nerve will produce the peculiar pain in question. Hence it not unfrequently happens that the deposite of bony matter on the extremity of the root of a tooth, the existence of a dead tooth, and any other similar cause will produce it. I have seen a case in which every constitutional remedy, usually employed in tic-doloureux, had been employed without effect for an affection of this kind, which had become excessively violent in its attacks; and on learning that it had existed ever since the extraction of a tooth, the part was carefully examined, and a small spicula of the alveolar process was discovered under the edge of the gum, on touching which the paroxysm of pain was instantly excited. The removal of this spicula was at once successful. This case is here mentioned to show how trifling a cause may produce the most severe pains of this description, and to point out the necessity for a careful and even minute examination of the part in which the pain appears to commence.—THOMAS BELL.

The alveolar processes frequently take part with the gums, and ulcerate, so that the teeth are left without their support, and at last drop out, similarly to the diseases of these parts already described.

All our juices contain a considerable quantity of calcareous earth, which is dissolved in them, and which is separated from them upon exposure, which continues mixed with the mucus ; so that the extraneous matter consits of earth and the common secreted mucus.

This disposition of the juices of the mouth to abound so much with earth, seems to be peculiar to some people, perhaps to some constitutions ; but I have not been able to ascertain what these are. We find persons who seem to have nothing particular, either in constitution or way of life, so subject to this accumulation, that the common methods of prevention, such as washing and brushing the teeth, have not the desired effect.

The disposition is so strong in some people, that the concretion forms on the whole body of the tooth : I have seen it even on the grinding surface of the *molares*, and often two or three teeth are cemented together with it. This I think could only happen to those who seldom or never use these teeth. It is very apt to accumulate on a tooth the opposite of which is lost.

I once saw a case of this kind, where the accumulation, which was on a grinder. appeared like a tumour on the inside of the mouth, and made a rising in the cheek, which was supposed by every one that felt it, to be a scirrhous tumour forming on the cheek ; but it broke off and discovered what it was.

This accumulation is very apt to begin during a fit of sickness, when the extraneous juices are allowed to rest ; and perhaps the juices themselves may have at this time a greater tendency to produce the incrusting matter.

It may also arise from any circumstance, which prevents a person from eating solids, whereby the different parts of the mouth have less motion on each other. Lying-in women are instances of this ; not to mention that the assistance of art in keeping the teeth clean is commonly wanting under such circumstances.

The adventitious substance, as was said before, is composed of mucus or animal juices, and calcareous earth ; the earth is attached to and crystalized upon the tooth, and the mucus is entangled in these crystals.

The removal of this adventitious matter, is a part in which the dentist ought to be very cautious ; he should be perfectly master of the difference between the natural or original tooth, and the adventitious matter ; and he should be sensible of the propriety of saving as much as possible of the tooth, and at the same time take pains to remove all that which is not natural. Many persons have had their teeth wholly spoiled by an injudicious treatment of them in this respect.

As the cause of this incrustation is not either a known disease of the constitution, or of the parts, but depends on a property of the matter, secreted, simply as inanimate matter ; the remedy of course becomes either mechanical or chemical.

The mechanical remedies are friction, filing, and picking. The first is sufficient, when the teeth are only beginning to be discoloured ; or, when already clean, they may be thus kept clean. Various are the methods proposed; to wash them with cold water, and at the same time to rub them with a piece of cloth on the fore finger, has been thought sufficient by some ; others have recommended the dust of a burnt cork, burnt bread, &c. with a view to act with more power on the adventitious matter, than what can be applied by the means of a soft brush or cloth.

In cases where this incrustation has been more considerable, powders of various kinds have been employed, such as tartar, bole, and many others.

Cream of tartar is often used, which at the same time that it acts mechanically, has likewise a chymical power, and dissolves this matter.

Other mechanical means are instruments to pick, scrape, and file off the calcarious earth ; these should only be made use of when it is in large quantities, and with great caution, as the teeth may be somewhat loose ; or, a part of the tooth may be broken off with the incrustation.

The chymical means are solvents : these are either alkalies or acids ; the alkaline salt will answer very well early in the disease ; for the crust in the first stage consists chiefly of mucus, which the alkali will remove very readily ; but it should not be used too freely, as it rather softens the gums, and makes them extremely tender.

Acids are also employed with success, as they dissolve the earth, but are attended with this disadvantage, that they act with more force upon the tooth itself, dissolving part of it, which is to be avoided, if possible ; for no part of a sound tooth can be spared.

We may observe that people who eat a good deal of salad or fruit, have their teeth much cleaner than common ; which is owing to the acids in those fruits ; and for the same reason people's teeth are commonly cleaner in summer than in winter, in those countries where there is a great plenty of fruit. When the accumulation has been considerable, the teeth and gums will feel tender on the removal of this matter, and even be affected by cold air ; but this will not be of long continuance.

CHAPTER VI.

OF THE IRREGULARITY OF THE TEETH.

As that part of each jaw, which holds the ten fore teeth, is exactly of the same size when it contains those of the first set, as when it contains those of the second ; and as these last often occupy a much larger space than the first, in such cases the second set are obliged to stand very irregularly.

This happens much oftener in the upper jaw, than in the lower : because, the difference of the size of the two sets is much greater in that jaw.

This irregularity is observed almost solely in the incisores and cuspidati: for they are the only teeth which are larger than their predecessors.

It most frequently happens to the cuspidati, because they are often formed later than the bicuspides; in consequence of which, the whole space is taken up before they make their appearance : in such cases they are obliged to shoot forwards or outwards over the second incisor. However, it frequently happens to the incisores, but seldom to such a degree. This arises often from the temporary cuspidatus of one or both sides standing firm. I have seen the irregularities so much as to appear like a double row.

The bicuspides generally have sufficient room to grow, because even more space, than what they can occupy, is kept for them by the temporary grinders. This however is not universally the case ; for I have seen where the bicuspides were obliged to grow out of the circle, very probably from their being later in growing than common.

That it is from want of room in the jaw, and not from any effect that the first set produce upon them is evident ; first, because in all cases of irregularity we find that there is really no room in the jaw, to allow of placing all the teeth properly in the circle ; so that some are necessarily on the outside of the circle, others within it, while others are turned with their edges obliquely as it were, warped ; and secondly, because the bicuspides are not out of the circle, although they are as much influenced by the first set as any of the others.

As they are not influenced by the first set, it cannot be of any service to draw the first possessor ; for that gives way in the same proportion as the other advances. As the succeeding tooth however is broader, it often interferes with a shedding tooth next to it, the fang of which not being influenced by the growth of its own succeeding tooth, it does not decay in proportion as the other advances, and therefore the drawing of the adjoining shedding tooth is often of service.

In cases of considerable irregularity for want of room, a principal object is to remove those which are most out of their place, and thereby procure room for the others which are to be brought into the circle.

To extract an irregular tooth would answer but little purpose, if no alteration could be made in the situation of the rest; but we find that the very principle upon which teeth are made to grow irregularly, is capable, if properly directed, of bringing them even again. This principle, is the power which many parts (especially bones) have of moving out of the way of mechanical pressure.

The irregularity of the teeth is at first owing to the mechanical pressure; for one tooth getting the start of another, and fixing firmly in its place, becomes a resistance to the young, loose, forming tooth, and gives it an oblique direction. The same principle takes place in a completely formed tooth, whenever a pressure is made upon it. Probably a tooth might by slow degrees be moved to any part of the mouth, for I have seen the cuspidati pressed into the place of the incisores. However it is observed, that the teeth are easier moved backwards than forwards, and when moved back that they are permanent, but often, when moved forwards, that they are very apt to recede.

The best time for moving the teeth is in youth, while the jaws have an adapting disposition, for, after a certain time, they do not so readily suit themselves to the irregularity of the teeth. This we see plainly to be the case, when we compare the loss of a tooth at the age of fifteen years, and at that of thirty or forty. In the first case we find, that the two neighboring teeth approach one another, in every part alike, till they are close; but in the second, the distance in the jaw, between the two neighbouring teeth, remains the same, while the bodies will in a small degree incline to one another from want of lateral support.

And this circumstance of the bodies of the teeth yielding to pressure upon their base, shews that, even in the adult, they might be brought nearer to one another by art properly applied.

As the operation of moving the teeth is by lateral pressure upon their bodies, these bodies must first have passed through the gum sufficiently for a hold to be taken.

The best time seems to be, when the two grinders of the child have been shed; for at this time a natural alteration is taking place in that part of the jaw.

The means of making this pressure I shall only slightly describe, as they will greatly vary according to circumstances, so considerably indeed, that scarcely two cases are to be treated alike, and in general the dentists are tolerably well acquainted with the methods.

In general, it is done with ligatures or plates of silver. The ligatures answer best when it is only required to bring two teeth closer together, which are pretty much in the circle. The trouble attending this is but trifling, as it is only that of having them tied once a week or fortnight.

Where teeth growing out of the circle, are to be brought into it, curved silver plates, of a proper construction must be used. These are generally made to act on three points, two fixed points on the standing teeth, and the third on the tooth which is to be moved. That part of the plate, which rests on the two standing teeth, must be of a sufficient length for that purpose, while the curved part is short, and goes on the opposite side of the tooth to be moved. Its effect depends very much on the attention of the patient, who must frequently press hard upon it with the teeth of the opposite jaw ; so that this method is much more troublesome to the patient than the ligature.

It is impossible to give absolute directions what tooth or teeth ought to be pulled out. That must be left to the judgment of the operator ; but the following general hints may be of service.

1. If there is any one tooth very much out of the row, and all others regular, that tooth may be removed, and the two neighbouring ones brought closer together.

2. If there are two or more teeth of the same side very irregular, (as for instance, the second incisor and cuspidatus) and it appears to be of no consequence, with respect to regularity, which of them is removed, I shall recommend the extraction of the farthest back of the two, viz. the cuspidatus : because, if there should be any space, not filled up, when the other is brought into the row, it will not be so readily seen.

3. If the above-mentioned two teeth are not in the circle, but still not far out of it, and yet there is not room for both ; in such a case ; I would recommend the extraction of the first bicuspis, although it should be perfectly in the row, because the two others will then be easily brought into the circle ; and, if there is any space left, it will be so far back as not to be at all observable.

The upper jaw is often rather too narrow from side to side, near the anterior part which supports the fore teeth, and projects forwards considerably over the lower, giving the appearance of the rabbit-mouth, although the teeth be quite regular in the circle of the jaw.

In such a case it is necessary to draw a bicuspis of each side, by which means the fore part of the circle will fall back ; and if a cross bar was to be stretched from side to side across the roof of the mouth, between cuspis and cuspis, it would widen the circle. The fore teeth might also be tied to this bar, which would be a means of assisting nature in bringing them back. This has been practised, but it is troublesome.

As neither the bodies nor the fangs of the teeth are perfectly round, we find that this circumstance often becomes a cause of their taking a twist ; for, while growing, they may press with one edge only on the completely formed tooth ; by which means they will be turned a little upon their centre.

The alteration of these is more difficult than of the former, for it is, in general, impossible to apply, so long and constantly as is necessary for such an operation, any pressure that has the power of turning the tooth upon its centre. However, in the incisores, it may be done by the same powers which produce the lateral motion; but where these cannot be applied, as is frequently the case, the tooth may be either pulled out entirely, and put in again even, or it may be twisted round sufficiently to bring it into a proper position, as hath been often practised.

It may not be improper, in this place, to take notice of a case which frequently occurs. It is a decay of the first adult grinder at an early age, viz. before the temporary grinders are shed, and before the second grinder of the adult has made its appearance through the gum. In this case, I would recommend removing the diseased tooth immediately, although it may occasion no kind of trouble; for, if it be drawn before the temporary grinders are shed, and before the second adult grinder has cut the gum, it will in a short time not be missed; because the bicuspis of that side will fall a little back, and the second and third grinders will come a little forward; by which means the space will be filled up, and these teeth will be well supported. Besides, the removal of this tooth, will make room for the fore teeth, which is often very much wanted, especially in the upper jaw.

CHAPTER VII.

OF IRREGULARITIES BETWEEN THE TEETH AND JAW.

Certain disproportions between the teeth and jaw, sometimes occur, one of which is when the body of the lower jaw is not of sufficient length for all the teeth. In such cases, the last grinder never gets perfectly from under the coronoid process, its anterior edge only being uncovered; and the gum, which still in part lies upon the tooth, is rubbed against the sharp points of the tooth, and is often squeezed between the tooth upon which it lies, and the corresponding one of the upper jaw. This occasions so much uneasiness to the patient, that it becomes necessary to relieve the gum, if possible, by dividing it freely in several places, that it may shrink and leave this surface of the tooth wholly uncovered. If this does not answer, which is sometimes the case, it is advisable to draw the tooth.

Sometimes, although but seldom, an inconvenience arises from the dentes sapientiæ being in the upper jaw, and not in the lower; these teeth pressing upon the anterior part of the root of the coronoid process when the mouth is shut; for the coronoid processes are farther forwards in such cases, than when the lower jaw also has its dentes sapientiæ; in short, the exact correspondence between the two jaws is not kept up.

In such cases I know of no other remedy, but the extraction of the tooth.

OF SUPERNUMERARY TEETH.

When there are supernumerary teeth, it will, in general, be proper to have them drawn; for they are commonly either troublesome, or disfigure the mouth.

CHAPTER VIII.

OF THE UNDER JAW.

It is not uncommon to find the lower jaw projecting too far forwards, so that its fore teeth pass before those of the upper jaw when the mouth is shut; which is attended with inconvenience, and disfigures the face.

This deformity can be greatly mended in young people. The teeth in the lower jaw can be gradually pushed back in those, whose teeth are not close, while those in the upper can be gently brought forward; which is by much the easiest operation.

These two effects are produced by the same mechanical powers. While this position of the jaw is only in a small degree, so that the edges of the under teeth can be by the patient brought behind those of the upper, it is in his own power to increase this, till the whole be completed; that is till the grinders meet; and it is not necessary to go farther. This is done by frequently bringing the lower jaw as far back as he can, and then squeezing the teeth as close together as possible.

But when it is not in the person's power to bring the lower jaw so far back, as to allow the edges of its fore teeth to come behind those of the upper, artificial means are necessary.

The best of these means is an instrument of silver, with a socket or groove shaped to the fore teeth of the lower jaw to receive them, so as to become fast to them, and sloped off as it rises to its upper edge, so as to rise behind the fore teeth in the upper jaw in such a manner, that, upon shutting the mouth, the teeth of the upper jaw may catch the anterior part of the slanting surface, and be pushed forward with the power of the inclined plane. The patient, who wears such an instrument, must frequently shut his mouth with this view.

These need not to be continued longer than till the edges of the lower teeth can be got behind those of the upper; for it is then within the power of the patient as in the first stated case.

CHAPTER IX.

OF DRAWING THE TEETH.

The extraction of teeth is, in some cases, an operation of considerable delicacy, and, in others, no operation is less difficult.

As this is often not thought of till an inflammation has come on, it becomes an object of consideration whether it be proper to remove the tooth while that inflammation continues, or wait till it has subsided. I am apt to believe it is better to wait even till the parts have perfectly recovered themselves, because the state of irritation renders them more susceptible of pain. The contrary practice might also appear reasonable, for by removing the tooth it might be imagined that we should remove the cause; but when the inflammation has once begun, the effect will go on independently of the cause; and to draw the tooth, in such a situation, is rather to produce a fresh cause, than to remove the present. Of this I think an instance has occured to me. However, most teeth are drawn in the height of inflammation; and, as we do not find any mischief from the operation, it is perhaps better to do it when the resolution of the patient is the greatest. The sensibility of the mind may even be less at this time.

Teeth are easy or difficult of extraction, according as they are fast or loose in the sockets; in some degree according to the kind of tooth, and also, in some degree, with reference to their situation.

They are naturally so fast as to require instruments; and the most cautious and dexterous hand; and yet are sometimes loose enough to be pulled out by the fingers.

When the sockets and gums are considerably decayed, and the tooth or teeth very loose, it would in most cases be right to perform extraction; for when they are allowed to stay, and perhaps are kept in their proper place by being tied to the neighbouring teeth, they then act upon the remaining gum and socket as extraneous bodies, producing ulceration there, and making those parts recede much farther than they naturally would have done, if the tooth had been drawn earlier; which produces two bad effects, it weakens the lateral support of the two neighbouring teeth, and it renders it more difficult to fix an artificial tooth. But unless these two last circumstances are forcibly impressed upon the patient, it is hardly possible to persuade him to consent to the loss of a tooth while it has any hold, especially a tooth which appears sound.

The extraction should never be done quickly; for this often occasions great mischief, breaking the tooth or jaw; on the same principle, as a bullet, going against an open door with great velocity will pass through it, but with little velocity will shut it.

This caution is most necessary in adults, or in the permanent teeth; for, in young subjects, where there are only the temporary teeth, the jaw not being so firm, the tooth is not in much danger of being broken.

It is a common practice to divide the gum from the tooth before it is drawn, which is attended with very little advantage; because at best it can only be imperfectly done, and that part of the gum, which adheres to the tooth, decays when it is lost. But if such a separation, as can be made, saves any pain in the whole operation, I should certainly recommend it; and at least in some cases, it might prevent the gum from being torn. It is also a common practice, to close the gum as it is termed; this is more for shew than use; for the gum cannot be made so close as to unite by the first intention; and therefore the cavity from which the tooth came, must suppurate like every other wound. But, as the sensations of these parts are adapted to such a loss; and, as a process very different from that which follows the loss of so much substance in any other part of the body, is to take place; the consequent inflammations and suppurations are not so violent. We may be allowed to call this a natural operation which goes on in the gum and alveoli, and not a violence; as we see that the delivery of a young animal before its time, which is similar to the drawing of a fixed tooth, in happening before all the containing parts are prepared for the loss, produces considerable local violence, without doing proportionable mischief. Therefore, in general it is very unnecessary to do any thing at all to the gum.

There are some particular circumstances, which naturally, and others which accidentally attend and follow the drawing of teeth; but they are in general of no great consequence.

There follows a bleeding from the vessels of the socket, and those passing between it and the teeth. This commonly is but trifling; however instances have occurred, where it has been very considerable, and the awkwardnesss of the situation makes it very difficult to stop it. In general it will be sufficient to stuff the socket with lint, or lint dipped in the oil of turpentine, and to apply a compress of lint, or a peice of cork thicker than the bodies of the adjacent teeth, so that the teeth in the opposite jaw may keep up a pressure.

It has been advised to stuff into the socket some soft wax, on a supposition that it would mould itself to the cavity, and so stop the bleeding; this perhaps may sometimes answer better than the other method, and therefore should be tried when that fails.

It is scarcely possible to draw some teeth without breaking the alveolar processes. This in general is but of little consequence, because from the nature of the union between the teeth and sockets, these last can scarcely be broken farther than the points of the fang, and in very few cases so far; therefore little mischief can ensue, as the fracture extends no farther than the part of the socket which will naturally decay after the loss of the tooth; and that part, which does not decay, will be filled up as a basis for the gum to rest upon. It has been supposed that the splinters do mischief. I very much doubt this; for if they are not so much detached as to lose the living principle, they still continue part of our body, and are rounded off at their points as all splinters are in other fractures, and particularly here, for the reasons already assigned, viz. because this part has a greater disposition for wasting. And if they are wholly detached, they will either come away before the gum contracts entirely; or, after it is closed, will act as an extraneous body; form a small abscess in the gum; and come out.

It sometimes happens, that the tooth is broken, and its point, or more of the fang is left behind, which is very often sufficient to continue the former complaints; and therefore it should be extracted, if it can be done, with care. If it cannot be extracted, the gum will in part grow over it; and the alveoli will decay as far as where it is. The decaying principle of the socket will produce the disposition to fill up at the bottom, whereby the stump will be pushed out; but, perhaps, not till it has given some fits of the tooth-ache. However, this circumstance does not always become a cause of the tooth-ache.

TRANSPLANTING TEETH.

Although this operation is in itself a matter of no difficulty, yet, upon the whole, it is one of the nicest of all operations, and requires more chirurgical and physiological knowledge than any that comes under the care of the dentist. There are certain cautions necessary to be observed, especially if it be a living tooth which is to be transplanted; because in that case it is meant to retain its life, and we have no great variety of choice. Much likewise depends upon the patient: he should apply early, and give the dentist all the time he thinks necessary to get a sufficient number of teeth that appear to be of a proper size, &c. Likewise he must not be impatient to get out of his hands before it is advisable.

The *incisores*, *cuspidati*, and *bicuspides*, can alone be changed, because they have single fangs. The success is greater in the *incisores*, and *cuspidati*, than the *bicuspides*; these last having frequently the ends of their fangs forked, from which circumstance the operation will become less perfect.

It is hardly possible to transplant the grinders, as the chance of fitting the sockets of them is very small. When indeed a grinder is extracted, and the socket sound and perfect, the dentist may, perhaps, be able to fit it by a dead tooth.

OF THE STATE OF THE GUMS AND SOCKETS.

The first object of attention is the sockets and gums of the person who is to have the fresh tooth. If the tooth, which is to be removed, be not wholly diseased, there is great probability that the socket will be as sound and complete as ever; but if the body of the tooth has been destroyed some time, and the fang has been in the state of what is commonly called a stump, it has most probably begun to decay on its outer surface and point; in which case the socket will be filled up in the same proportion; if so, there is no possibility of success. But as in the operation of transplanting, the diseased tooth is to be first drawn, it will show the state of the socket; and the scion tooth is to be left or drawn, according to the appearance on the diseased one.

If the appearance be not favourable, and it therefore be not probable that the scion tooth can be introduced, so as to unite in the place of the stump, I would recommend to every dentist to have some dead teeth at hand, that he may have a chance to fit the socket. I have known these sometimes last for years, especially, when well supported by the neighbouring teeth. Indeed this very practice is recommended by some dentists in preference to the other. But even this should not be attempted, unless the socket is sound and pretty large, as the tooth can otherwise have but very little hold.

Whenever there are gum boils, I would not recommend transplanting, as there is always in such cases a diseased socket, although the disease has originated in the tooth. In one or two instances, indeed, which I have seen, the boil has been cured by such an operation.

If the gums are diseased, and become spongy, as has been described, it will be very improper to transplant, as there will be but little chance of success ; also, if the sockets have a disposition to waste, and the tooth becomes in some degree loose ; in short, the sockets and gums should be perfectly sound. No person should have a tooth transplanted, while taking mercury, even although the gums are not affected by it at the time ; for they may become affected by that medicine before the tooth is fixed. I would carry this still farther ; no one should have a tooth transplanted, who has any complaint that may subject him to the taking of mercury before the tooth is well fixed. For this reason, those who have teeth transplanted, ought particularly to avoid for some time the chance of contracting any complaint, for the cure of which mercury may be necessary.

I would not recommend transplanting, even where mercury has been taken lately. How soon mercury may be taken after a tooth has been transplanted, is not easily ascertained. I have known it fail from this cause, (as it seemed) after six weeks, where there was every reason to suppose that it might have been attended with success.

OF THE AGE OF THE PERSON WHO IS TO HAVE THE SCION TOOTH.

The socket should be of its full size, and one or two grinders on each side of each jaw should be full grown, to keep the two jaws at a proper distance, which will allow the transplanted tooth to be undisturbed by the motion of the jaw while fastening. This will be at the age of eighteen or twenty years.

It sometimes, however, happens, that a fore tooth decays before this age, and even before it is completely formed ; and, therefore all the above mentioned advantages cannot be had. In such cases, it is not very material whether transplanting is practised or not, as simply to draw the diseased tooth, will in most cases be sufficient ; for the two neighbouring teeth may be brought together, so as to fill up the space, the others following in a less degree, as has been already observed, upon irregularities of the teeth.

OF THE SCION TOOTH.

The scion tooth, or that which is to be transplanted, should be a full grown young tooth ; young, because the principle of life and union is much stronger in such than in old ones.

It will be scarcely necessary to observe, that the new teeth should always be perfectly sound, and taken from a mouth which has the appearance of that of a person sound and healthy; not that I believe it possible to transplant an infection of any kind from the circulating juices; although we know from experience that it may be done by a matter secreted from them. The scion tooth should be less than what the tooth was, the place of which it is to supply. This cannot at first be known with certainty, but it may in most cases be nearly ascertained; and that is by judging from the sizes of the bodies of the two teeth: but as the fangs do not always bear an exact proportion to the body, it sometimes happens that this method fails. Also it is not always in our power to judge after this manner; for in some cases the body of the tooth of the person who is to have one transplanted, shall be quite destroyed, the fang only remaining: in these cases we must judge from its correspondent on the opposite side; but even that tooth is sometimes destroyed.

It has been supposed, that we run no risk by taking the scion tooth from a young subject; but this is no security, for a complete tooth is of the same size in the young as the old. To remedy this inconvenience as much as possible, the scion tooth should be that of a female, for female teeth are in general smaller than those of men; but the inconvenience still remains, whenever a female is the subject of this operation. Some women have such small teeth, that it is almost impossible to fit them. When the fang of the scion tooth is larger than that which it is intended to supply, it must be made smaller, and only in that part where it exceeds. But the necessity of this should be avoided, if possible; for a tooth that is filed has lost all those inequalities which allow it to be held much faster. If however, some part must be removed, it should be done so as to imitate the old tooth as much as possible. The best remedy is to have several people ready, whose teeth in appearance are fit; for if the first will not answer, the second may. I am persuaded this operation has failed, from a tooth being forced in too tight; for let us reflect what must be the consequence of such practice. A part of the soft covering of the tooth, or lining of the socket, is squeezed between two hard bones, so that all circulation of juices is prevented; a mortification in that part takes place; and in consequence of that a gum boil, and the loss of all union between tooth and socket; so that the tooth drops out.

It will be hardly necessary to mention, that the sooner the scion tooth is put into its place the better, as delay will perpetually lessen the power upon which the union of the two parts depends.

OF RE-PLACING A SOUND TOOTH WHEN DRAWN BY MISTAKE.

It sometimes happens, that a tooth is drawn on an idea that it is diseased, because it gives pain, but appears after the extraction to be perfectly sound. In such a case I would recommend the replacing it, that there may be no loss by the operation ; and the seat of the pain will probably be removed to the next tooth. A tooth beat out by violence, should be replaced in the same manner. This ought to be done as soon as possible ; however, I would even recommend the experiment twenty-four hours after the accident, or as long as the socket will receive the tooth, which may be for some days.

If the tooth be replaced at any time before its life is destroyed, it will re-unite with the cavity of the socket, and be as fast as ever.

No tooth is excepted from this practice ; for although in the grinders there are more fangs than one, yet these fangs will as readily go into their respective sockets as one fang would ; and most probably when the tooth has been beat out, the sockets are enlarged by their giving way.

However, the grinders are not so subject to such accidents, as the fore teeth, both from their situation, and from their firmness in the sockets.

Where a tooth has been only loosened, or shoved out in part, the patient must not hesitate, but replace it immediately. As a proof of the success to be expected from replacing teeth, I will relate the following case.

A gentleman had his first *bicuspis* knocked out, and the second loosened. The first was driven quite into his mouth, and he spit it out upon the ground, but immediately picked it up and put it into his pocket. Some hours afterwards he called upon me, mentioned the accident, and shewed me the tooth. Upon examining his mouth, I found the second *bicuspis* very loose, but pretty much in its place. The tooth, which had been knocked out, was not quite dry, but very dirty, having dropped on the ground, and having been some time in his pocket. I immediately put it into warm water, let it stay there to soften, washed it as clean as possible, and then replaced it, first having introduced a probe into the socket to break down the coagulated blood which filled it. I then tied these two teeth to the first grinder, and the *cuspidatus* with silk, which was kept on some days, and then removed. After a month they were as fast as any teeth in the head; and, if it were not for the remembrance of the circumstance above related, the gentleman would not be sensible that his teeth had met with any accident. Four years have now passed since it happened.

OF TRANSPLANTING A DEAD TOOTH.

The insertion of a dead tooth has been recommended, and I have known them continue for many years. If this always succeeded as well as the living, I would give it the preference, because we are much more certain of matching them, as a much greater variety of dead teeth can be procured than of living ones. But they do not always retain their color, but are susceptible of stain. However, I have known them last for years without any alteration ; and some have appeared rather to acquire a transparency, which dead teeth in general have not.

OF THE IMMEDIATE FASTENING OF A TRANSPLANTED TOOTH.

When a tooth has been transplanted, the next thing to be done is to fix it in that position in which it is intended to remain; that is in general to the two neighboring teeth, by means of silk or sea weed. If it is an *incisor* or *cuspidatus*, the silk should first be tied to the neck of one of the neghboring teeth, as near the gum as possible; then the two ends of the silk should be brought round upon the body of the scion tooth, but not so near the gum as in the former. and tied there; then it should be brought round the neck of the other neighboring tooth, as near the gum as possible, as in the first, and tied there. The reason of the difference of the heights of the silk recommended, must appear evident, it being our intention to keep the tooth close to the bottom of the socket.

If the transplanted tooth be a *bicuspis*, the same mode of tying may be followed; but the silk may be brought over its grinding surface between the two points, by which it will be better confined than in any other way. It sometimes happens, that the body of the scion tooth is either too long, too thick, or in such a position as to be pressed upon by the teeth of the opposite jaw. Great care should be taken to prevent this, as the opposite teeth constantly oppose the fastening of those which are transplanted, in every motion of the jaw. To remedy this inconvenience, we have recommended smaller teeth than those lost; but even when they are of a proper size in other respects, they shall in some cases still touch the opposite teeth. When this arises from length of the tooth, a small portion may be filed off from the cutting edge with great safety. If it is owing to the thickness of the scion tooth, and in the upper jaw, some part may be filed off the hollow or concave surface of the tooth, where the opposite touch. When it is owing to the position of the teeth, the same thing may be done with propriety. By attending to this circumstance in the tying, this inconvenience may, in many cases, be prevented; however, if it should not be in the power of the dentist to prevent it by the above mentioned method, then he should bring them forwards by tying them to a silver plate, a little more bent than the circle of the teeth, and resting at each end upon the neighboring teeth.

Where a tooth does not exactly fit, but is too short, then there arises a difficulty with the patient whether he ought to consult propriety or beauty. The tooth should be as much in the socket as it can be with ease; for, although in that case it is too short, appearances must give way.

The patient must now finish the rest. He must be particularly attentive at first, and give it as little motion as possible. In many cases a soreness will continue some days, and the gums will swell; in others there will be neither soreness nor swelling.

The patient must take great care not to catch cold, or expose himself to any of the other common causes of fever; for such accidents are very likely to prevent the success of this operation. This caution is more necessary in the winter than the summer.

The tooth in some will begin to be fast in a few days, and the gum will cling close to it; while in others, many weeks will pass before this happens; though the tooth may become fixed at last.

I have seen the transplanted tooth come a little way out of the socket; and without any art being used, retire into it as far as at first. The silk is to be removed sooner or later, according as the tooth is more or less fast; in some people after a fortnight, in others not till some months after the operation

This operation, like all others, is not attended with certain success. It sometimes happens that the two parts do not unite; and in such cases the tooth often acts as an extraneous body,* and instead of fastening, the tooth becomes looser and looser; the gum swells, and a considerable inflammation is kept up, often terminating in a gum boil. In some cases, where it is also not attended with success, there are not these symptoms; the parts appear pretty sound, only the teeth do not fasten, and sometimes drop out.

It also happens that transplanted teeth have a very singular operation performed on them while in the socket; the living socket and gum finding this body kept in by force, so that they cannot push it out, set about another mode of getting rid of it, by eating away the fang till the whole is destroyed, exactly similar to the wasting of the fangs of the temporary teeth in the young subject.

I have all along supposed, that where this practice is attended with success, there is a living union between the tooth and socket, and that they receive their future nourishment from this new matter. My reasons for supposing it were founded on experiments on other parts, in animals, and also observations made on the practice itself: for first I observed that they kept their color, which is very different from that of a dead tooth; for a living tooth has a degree of transparency, while a dead one is of an opaque chalky white.

Secondly, there are instances of their becoming diseased, in the same manner as an original living tooth; at least the following case favors strongly this opinion.

In October, 1772, a gentleman, of the city of London, had a tooth transplanted, which was perfectly sound, and fixed in its new socket extremely well; about a year and a half after, two spots were observed on the fore part of the body of the tooth, which threatened a decay; they were exactly similar to specks, or the first appearance of decay, which come upon natural living teeth. Pain is also sometimes felt in the transplanted tooth.

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* I say often, because I do not suppose that it always acts as an extraneous body; because we know that dead teeth have stood for years, without affecting the sockets or gums in the least. We may therefore suppose, that it is sometimes the case with transplanted living teeth.

But what puts it beyond a doubt is, that a living tooth, when transplanted into some living part of an animal, will retain its life; and the vessels of the animal shall communicate with the tooth; as is shewed by the following experiments.

I took a sound tooth from a person's head; then made a pretty deep wound with a lancet into the thick part of a cock's comb, and pressed the fang of the tooth into this wound, and fastened it with threads passed through other parts of the comb. The cock was killed some months after, and I injected the head with a very minute injection; the comb was then taken off, and put into a weak acid, and the tooth being softened by this means, I slit the comb and tooth into two halves, in the long direction of the tooth. I found the vessels of the tooth well injected, and also observed that the external surface of the tooth adhered every where to the comb by vessels, similar to the union of a tooth with the gum and sockets.[*] [†]

OF DENTITION.

Teeth, at their first formation, and for some time while growing, are completely inclosed within the sockets and gums, and in their growth they act upon the inclosing parts in some degree as extraneous bodies; for while the operation of growth is going on in them, another operation is produced, which is a decay of that part of the gum and socket that covers the tooth, and which becomes the cause of the very disagreeable and even dangerous symptoms which attend this process. As the teeth advance in size, they are in the same proportion pressing against these sockets or gums, from whence inflammation and ulceration are produced.

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[*] I may here just remark, that this experiment is not generally attended with success. I succeeded but once out of a great number of trials.

[†] It is unnecessary in the present day to enter into any discussion on the merits of an operation now, I believe wholly discontinued. From the experiments which Hunter made on the transplanting of teeth from the jaw to other situations, and the successful result of several of them, the operation in question became a favourite one with him; and it appears to have been very frequently performed either by himself or under his directions. The frequent failures which occurred, even in the operation itself, and still more the severe results which very often succeeded its performance at different periods, have very properly induced almost all subsequent practitioners to abandon its employment. Nothing but the sanguine expectations created in an ardent mind, by the interesting results which followed his first experiments, could account for a man of so sound a judgment having followed up a practice so obviously objectionable.

The experiment with which this section is closed has, however, an interest attached to it far more important than its having given rise to the temporary adoption of an objectionable operation. In the result of this experiment may be found an interesting collateral argument in favor of the organized structure of the teeth, and their actual living connexion with the body. The vessels of the tooth, we are told, were well injected, and the external surface adhered everywhere to the comb by vessels. To what purpose are these vessels formed, what object can possibly be fulfilled by the existence of a vascular pulp in the internal cavity, and a vascular periosteum covering the external surface,—so obviously vascular that it was *well* injected from the vessels of a cock's comb, into which it had been transplanted,—unless they are intended to *nourish* the bony substance of which the tooth consists, and to form the medium of its connexion with the general system?—THOMAS BELL.

That ulceration which takes place in dentition, is one of the species which seldom or never produces suppuration; however, in some few cases I have found the gums ulcerated, and the body of the tooth surrounded with matter; but I believe this seldom happens till the tooth is near cutting the skin of the gums.

As this is a disease of an early age, and indeed almost begins with life, its symptoms are more diffused, more general, and more uncertain at such an early period, than those of any disorder of full grown people, putting on the appearance of a great variety of maladies: but these symptoms become less various, and less hazardous, as the child advances in years; so that the double teeth of the child, and still more so the second set of teeth, or those of the adult, are usually cut without producing much disturbance.

These symptoms are so various in different children, and often in the same child, that it is difficult to conceive them to be from the same origin; and the varieties are such as seem to be beyond our knowledge.

They produce both local and constitutional complaints, with local sympathy.

The local symptoms we may suppose to be attended with pain, which appears to be expressed by the child when he is restless, uneasy, rubs his gums, and puts every thing into his mouth. There is generally inflammation, heat, and swelling of the Gums, and an increased flow of saliva.

The constitutional, or general consequential symptoms, are fever, and universal convulsion. The fever is sometimes slight, and sometimes violent. It is very remarkable both for its sudden rise and declension; so that in the first hour of this illness the child shall be perfectly cool, and in the second flushed and burning hot, and in the third temperate again.

The partial or local consequential symptoms are the most various and complicated; for the appearance they put on is in some degree determined by the nature of the parts they affect; wherefore they imitate various diseases of the human body. These symptoms we shall describe in the order of their most frequent occurrence.

Diarrhœa, costiveness, loss of appetite, eruptions on the skin, especially on the face and scalp, cough, shortness of breath, with a kind of convulsed respiration, similar to that observable in the hooping cough, spasms of particular parts, either by intervals or continued, and increased secretion of urine, and sometimes a diminution of that secretion, a discharge of matter from the *penis*, with difficulty and pain in making water, imitating exactly a violent *gonorrhœa*.

The lymphatic glands of the neck are at this time apt to swell; and if the child has a strong tendency to the scrofula, this irritation will promote that disease.

There may be many other symptoms with which we are not at all acquainted, the patients in general not being able to express their feelings. Many of the symptoms of this disease are dangerous, namely, the constitutional ones, and also those local symptoms which attack a vital part. The fever, indeed, seldom lasts so long as to be fatal; but the convulsions, especially when universal, frequently are so. Local convulsions, if not in a vital part, although often very violent, do not kill; and when any part not vital sympathizes, the patient is generally free from danger; a security to the whole being obtained by the sufferings of a part which is of little consequence to life.

Universal sympathy seems to be the first effect of irritation, and in general appears as such in those whose local and partial sensation, and irritability, are not yet formed; for, in such subjects, when one part is irritated, the whole sympathizes, and general convulsions ensue. But as the sensations and partial irritability begin to be formed, each part, in some degree acting for itself, acquires its own peculiarities; so that when a local disease takes place in a patient that is very young, it is capable of giving a general disposition to sympathise; but as the child advances, the power of sympathy becomes partial, there not being now in the constitution that universal consent of parts; but some one part is found which has a greater aptitude than the rest to fall in with the local irritation; therefore the whole disposition for sympathy is directed to some particular part, and it sympathizes according to its own peculiar action. This arises from the different organs acquiring more and more their own independent sensations as the child grows older; and gradually losing the power of sympathizing with one another: so that by the age of six years few parts suffer but those immediately affected; and in adults, who cut their teeth, we almost always find the pain and other symptoms confined to the part, or only local sympathy taking place, such as a swelling of the side of the face.

But as the symptoms become more confined, the suffering part is often much more violently affected, than where it has a power of taking in the other parts. Therefore we find that in adults the pain of cutting a grinder is frequently excessive, and that the local inflammation is very considerable, and often of long continuance. This is not the case with children; their pain does not appear to be so very considerable, and we are certain that the local inflammation is not great; that it is confined to the very parts which suffer, and is not diffused over the face; so that in children the symptoms of sympathy are often more violent than those of the parts themselves. Though it is generally a fact, that the symptoms of dentition in adults are confined to the parts immediately injured, it is not always or certainly so; for sometimes, as will appear from case the fourth, there will be the strongest symptoms imaginable from sympathy; which seems to be owing to a peculiar aptitude in the constitution to universal sympathy. These pains in the adult are often periodical, having their regular and fixed periods, from which circumstance they are often supposed to be aguish, and the bark is administered, but without effect. Medicines for the rheumatism are likewise given, with as little success; when a tooth will appear, and disclose the cause of the complaint; and by lancing the gums the cure often is performed, but the disease will recur if the gum happens to heal over the tooth, which it will very readily do, if the tooth is pretty deep. As these teeth are generally slower in their growth than the others, and more especially those which come very late, they become the cause of many returns of the symptoms. How far children under this circumstance are subject to paroxysms of the disease, is not an easy thing to determine; but from many of their sympathetic symptoms going off and returning, it would appear that they have also their exacerbation.

OF THE CURE.

The cure of diseases arising from dentition, from their nature, can only be temporary and local, even when it is directed to the real seat of the disease; and certainly every method of cure which is not so directed, must prove ineffectual, as it can only operate by destroying the effect. Opiates, indeed, will in some degree take off the irritation, by destroying the sensibility of the part; but surely it would be better at once to remove the cause, than to be attempting from time to time to remove or palliate the effect. When the sympathy is partial, and not in a vital part, it would be better to allow it to continue than cure it, because it may by such means become universal: for instance, if it is a diarrhœa, the best way is to allow it to go on, or at least only correct it if too violent, which is often the case. I have seen cases, where the stomach and intestines have sympathized so much, as almost to threaten death. The small quantity of nourishment that the stomach could admit of was hurried off by the intestines.

OF CUTTING THE GUMS.

As far as my experience has taught me, to cut the gum down to the teeth appears to be the only method of cure. It acts either by taking off the tension upon the gum, arising from the growth of the tooth, or by preventing the ulceration which must otherwise take place.

It often happens, particularly when the operation is performed early in the disease, that the gum will re-unite over the teeth; in which case the same symptoms will be produced, and they must be removed by the same method.

I have performed the operation above ten times upon the same teeth, where the disease had recurred so often, and every time with the absolute removal of the symptoms.

It has been asserted, that to cut the gum once will be sufficient, not only to remove the present, but to prevent any future bad symptoms from the same cause. This is contradictory to experiment, and the known laws of the animal economy; for frequently the gum, from its thickness over the tooth, or other causes, must necessarily heal up again, and the relapse is as unavoidable as the original disease.

A vulgar prejudice prevails against this practice, from an objection, that if the gum is lanced so early, as to admit of a re-union, the cicatrised part will be harder than the original gum, and therefore the teeth will find more difficulty in passing, and give more pain. But this is also contrary to facts; for we find that all parts which have been the seat either of wounds or sores, are always more ready to give way to pressure, or any other disease which attacks either the part itself or the constitution. Therfore each operation tends to make the passing of the teeth easier.

When the teeth begin to give pain, we find them generally so far formed, as to be easily discerned through the gum.

The fore teeth are to be observed at first, not on the edge of the gum, but on the fore part, making risings there, which appear whiter than the other parts: and it may be observed, that the gums are broader than usual. At this period the incisions must be made pretty deep, till the tooth be felt with the instrument, otherwise little effect will be produced by the operation: and this is the general rule with respect to the depth of the incision in all cases.

When the grinders shoot into the gum, they flatten the edge of the gum, and make it broad. These teeth are more easily hit by the instrument than the fore teeth.

The operation should not be done with a fine pointed instrument, such as a common lancet, because most probably the point will be broken off against the tooth, which will make the instrument unfit for going on further, if more incisions are required.

A common lancet, with its point rounded, is a very good instrument; but an instrument, something like a fleam, would be of the most convenient shape.

There is no need of any great delicacy in the operation, the gums being very insensible parts; and to cut through the whole gum down to the teeth with certainty, when they are pretty deep, requires some force,

The gums will bleed a little, which may be of service in taking off the inflammation. I never saw a case, where the bleeding either proved inconvenient or dangerous. If it ever should be troublesome, I think there could be no great difficulty in stopping it. In general, no application is necessary: the gums soon unite at the most distant part from the tooth, if it lies deep; and if it be more superficial, the thin gum soon shrinks back over the tooth, leaving it bare, and decays.

This cutting of the dentes sapientiæ is often attended with an inconvenience, which does not attend the others; and this happens, I believe, only when they come very late, viz: when the jaws have left off growing. This is the want of room in the jaws for these late teeth; a circumstance which produces an addition to the other inconveniencies arising from dentition. When it takes place in the upper jaw, the tooth is often obliged to grow backwards; and in such a position it sometimes presses on the interior edge of the coronoide process, in shutting the mouth, and gives great pain. When it takes place in the lower jaw, some part of the tooth continues to lie hid under that process, and covered by the soft parts, which are always liable to be squeezed between that tooth and the corresponding tooth in the upper jaw. To open very freely, is absolutely necessary in these cases: but even that is often not sufficient. Nothing but drawing the tooth or teeth, will remove the evil in many cases.

CASES.

It would be endless to give histories of cases, exemplifying each symptom of dentition. I shall only relate a few which are singular; and which, being extraordinary, will the better enforce the propriety, in all cases, of the cure I have recommended.

Case 1.—A young child was attacked with contractions of the *musculi flexores* of the fingers, and also of the toes. These contractions were so considerable as to keep her fingers and thumb constantly clinched, and so irregularly, that they appeared distorted. All the common antispasmodic medicines were given, and continued for several months, but without success.

I scarified the gums down to the teeth, and in less than half an hour all the contractions had ceased. This, however, only gave relief for a time. The gums healed; the teeth continued to grow, and filled up the new space acquired by the scarifications; and the same symptoms appeared a second time.

The former operation was immediately performed, and with the same success.

Case 2.—A boy, about two years of age, was taken with a pain and difficulty in making water; and voided matter from the *urethra.* I suspected that by some means or other this child might possibly be affected by the venereal poison; and the suspicion naturally fell on the nurse.

These complaints sometimes abated, and would go off altogether; and then return again. It was observed at last, that they returned only upon his cutting a new tooth: this happened so often, regularly and constantly, that there was no reason to doubt but that it was owing to that cause.

Case 3.—A lady about the age of five or six and twenty years, was attacked with a violent pain in the upper jaw; which at last extended through the whole side of the face, similar to a violent toothache, from a cold; and was attended with consequent fever.

It was treated at first as a cold; but, from its continuance, was afterwards supposed to be nervous.

The case was represented to me from the country; and I gave the best directions that I could, on a representation of the symptoms.

She came to London some months after, still laboring under the same complaint. Upon examining the mouth, I observed one of the points of the *dens sapientiæ* ready to come through. I lanced the gums, and the disorder gave way immediately.

A lady about the same age was attacked with a violent pain in the left side of her face. It was regularly periodical; coming on at six o'clock in the evening. She took the peruvian bark, which had no effect. She took antimonials, and Dovar's powder, which also were equally ineffectual. But ene of the points of the *dens sapientæ* of the upper jaw of the same side appearing, shewed the cause, and indicated the remedy. The gums were lanced, and the pain ceased.

THE END.

TO SUBSCRIBERS.

In the next number of the American Journal of Dental Science, will be commenced the re-publication of Brown's Dentologia, a didactic Poem on the diseases of the teeth, and their proper remedies, with notes, by Eleazar Parmly. This work was originally published for private distribution, and being now out of print, it is hoped this re-publication will be acceptable to our subscribers.

Hunter on the Teeth, has been lately published with notes, by Thomas Bell of London, in the Select Medical Library, and Eclectic Journal of Medicine, for August 1839, vol. III, No. 10; Haswell, Barrington & Haswell. Phil.

The following is the list of subscribers to the American Journal of Dental Science, Edited by Eleazar Parmly of New-York, and Chapin A. Harris, M. D. of Baltimore;—Publishing Committee, E. Parmly, E. Baker, S. Brown, of New-York;—of which, this re-publication is a part:—

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EXPLANATION OF PLATES.

PLATE I.

Fig. 1. A front view of the upper and lower-jaws of an adult, with a full set of teeth. *a a a*, the upper-jaw. *b b*, the lower-jaw. *c* its ascending process. *d* the root of the coronoid process. *e* the condyle. *ffff* the fluited alveolar processes.

PLATES

TO HUNTER.

PLATE I.

Fig. 1.

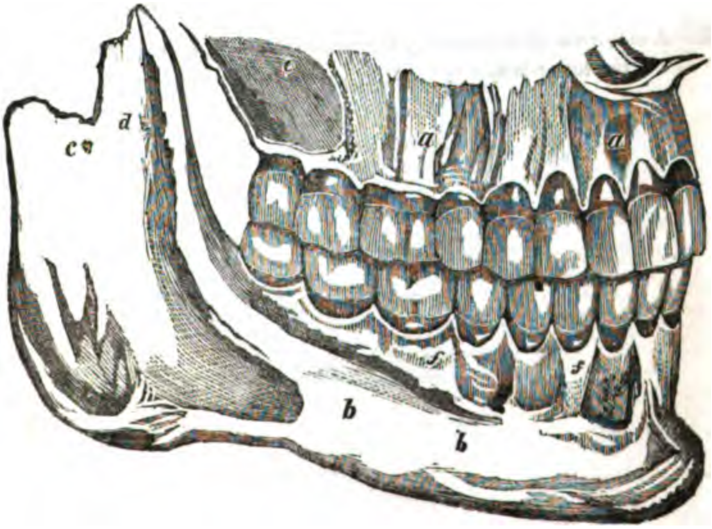


PLATE I.

Fig. 2. A side view of both jaws in the same state. *a a* the upper-jaw. *b b* the lower-jaw.

PLATE I.

Fig. 2.

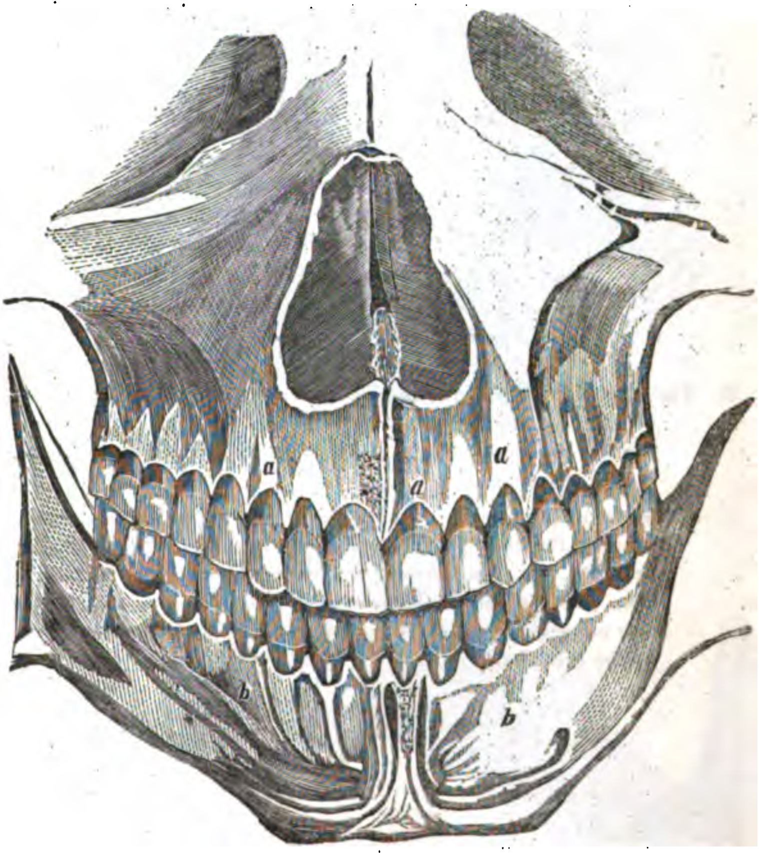


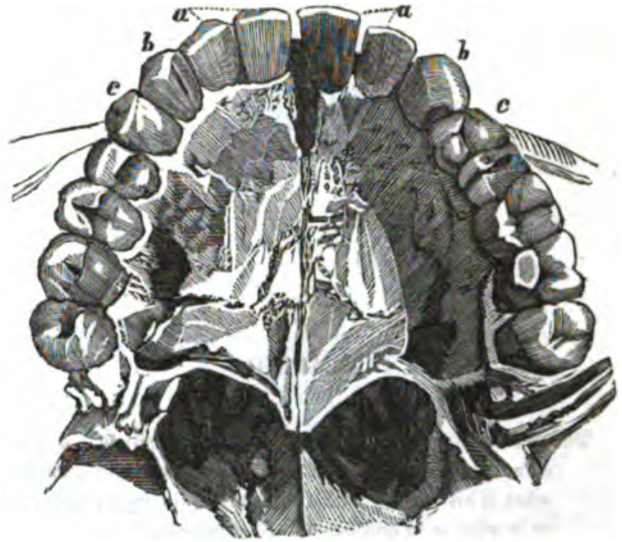
PLATE II.

Fig. 1. The basis of the upper-jaw, with a full set of teeth, showing the cutting edges and grinding surfaces of the teeth of the upper-jaw. *a a a a* the four incisores. *b b* the two cuspidati. *c c* the four bicuspides. *d d* the six grinders.

Fig. 2. A view from above and behind of the lower-jaw, with a full set of teeth; showing the cutting edges and grinding surfaces of the teeth of that jaw, with the coronoid processes, and condyles for articulation. *a a a a* the four incisores. *b b* the two cuspidati. *c c* the four bicuspides. *d d* the six grinders. *e e* the coronoid processes. *ff* the condyles.

PLATE II.

Fig. 1.



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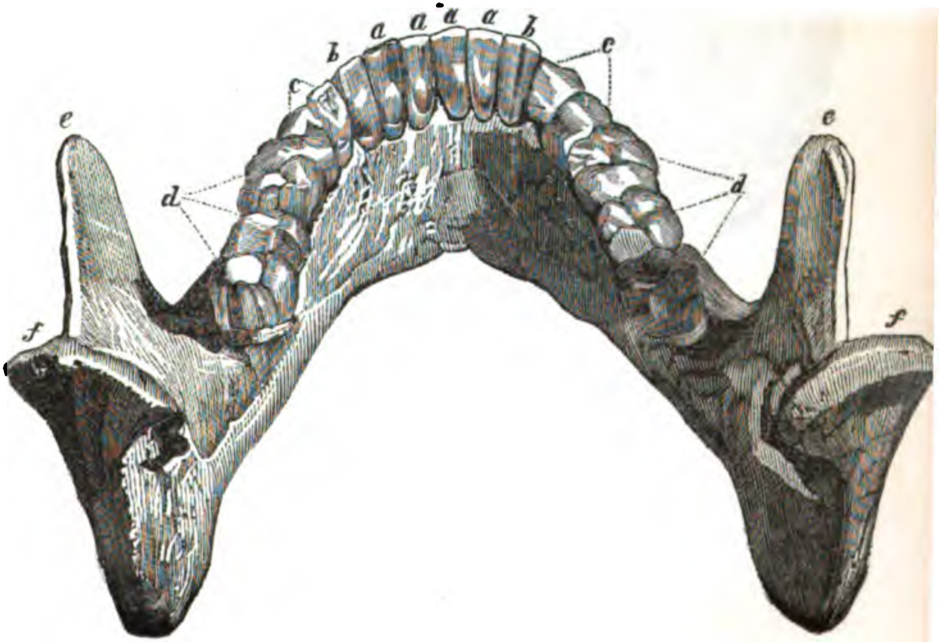


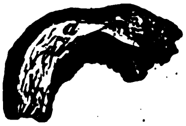
PLATE II.

Fig. 3. The moveable cartilage of the joint of the lower-jaw. *a* the cut surface of a longitudinal section of it: the lower and concave surface is what is articulated with the condyle, the upper and convex surface is what is in contact with the temporal bone.

Fig. 4. A side view of the upper and lower-jaw, in which the outer plate of the alveolar process was taken off to expose the fangs of the teeth in their sockets. The length of each fang is at once seen with respect to its neighbour, and this kind of articulation pointed out at one view.

PLATE II.

Fig. 3.



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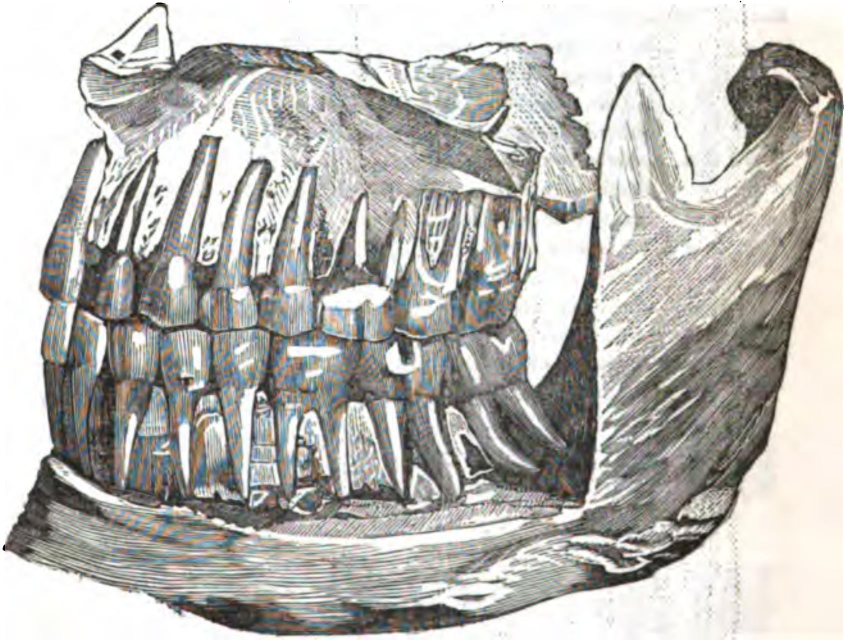


PLATE III.

Fig. 1. Two views of the sixteen teeth of one side of both jaws, taken out of their sockets to expose the whole of each tooth.

Row 1. The teeth of the upper-jaw, seen from the outside.

Row 2. The same view of the teeth of the lower jaw : the five single are similar to those of the upper jaw, but the grinders in this have only two fangs. *a* the incisors. *b* the cuspidati. *c c* the bicuspides. *d d* the two first grinders, having three fangs. *e* the third grinder, or dens sapientiæ, having also three fangs.

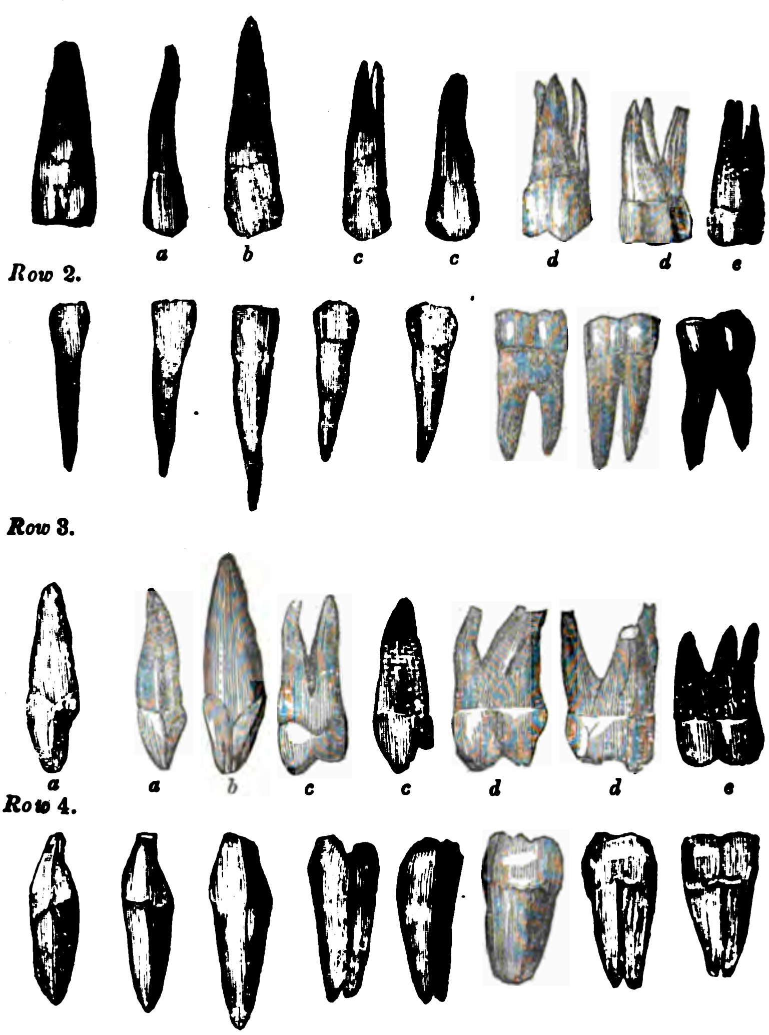
Row 3 & 4. A side view of the same teeth, showing that the incisores and cuspidati, in this view, differ from the former view more than the bicuspides or grinders.

Row 3. *a a* the two incisores of the upper jaw, showing the hollowed inner surface of the body of these teeth. *b* the cuspidatus, showing the same. *c c* the bicuspides, showing the two points at the basis of each. The first of them has a forked fang.

Fig. 2–7. Show the cavities of the teeth in the incisores, cuspidatus, bicuspidatus and molares.

PLATE III.

Fig. 1.



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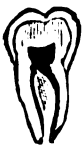

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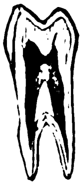

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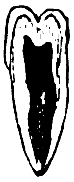

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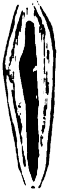

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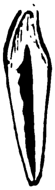


Fig. 7.

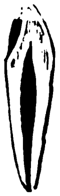


PLATE III.

Fig. 8. A molaris of the lower jaw, with part of its fangs sawed off, to show that the sides of the cavity or canal have grown together, and divided it into two small canals; which are represented by the four dark points.

Fig. 9—10. the cavity in the body of the teeth seen in transverse sections.

Fig. 11—12. Longitudinal sections of the molares to expose the cavities.

Fig. 13. The basis of a molaris whose points were worn down, and the bony part which projected into those points exposed.

Fig. 14. A molaris whose bony part is wholly exposed, and only a circle of enamel left, covering the sides all round.

Fig. 15—16. A lateral view of the enamel of a molaris and bicuspis, cut longitudinally.

Fig. 17. A cuspidatus worn so much down as to expose the whole end of the bony part, a circle only of enamel remaining.

Fig. 18. An incisor slit down its axis, to show the enamel upon the body of the tooth, covering much more of the convex than of the concave part.

Fig. 19. An incisor, showing the same as fig. 17.

Fig. 20. A horse's tooth slit down its whole length, to show how the enamel is intermixed with the bony part, and that it passes through the whole length of the tooth. The enamel is represented by the white lines, which are penniform, showing the striated texture of the enamel.

Fig. 21. The grinding surface of a horse's molaris, to show the irregular course of the enamel.

Fig. 22. An incisor a little magnified, slit down its middle, to show that the enamel is striated, and that the striæ are turned towards the centre.

Fig. 23. A grinder in the same state, to show the same circumstances.

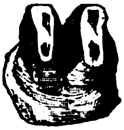
Fig. 24. The basis of a molaris broken through, showing that the enamel is striated in this view also, and that the striæ point to the centre. N. B. The teeth must be broken to show these facts.

Fig. 25. An old tooth, whose basis has been worn down below the original termination of the cavity in the body of the tooth, and that end has been filled up, in the same proportion with new matter, to prevent the cavity being exposed. This matter is of a darker colour, as represented in the figure.

Fig. 26. Another tooth in the same state.

PLATE III.

Fig. 8.



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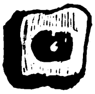

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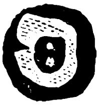

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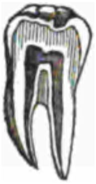

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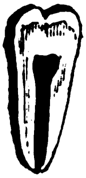

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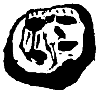

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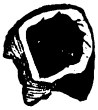

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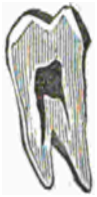

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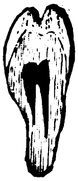

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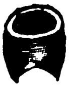

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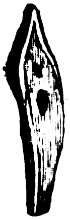

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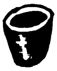

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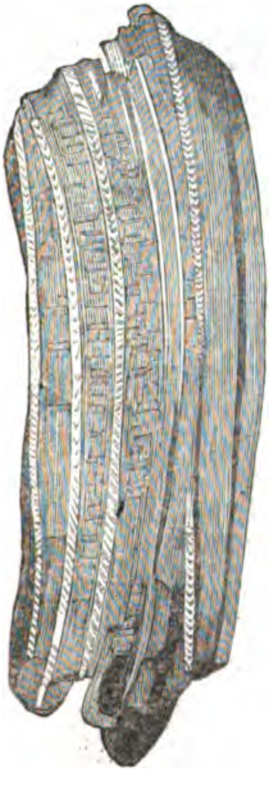

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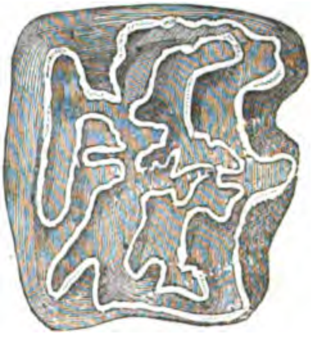

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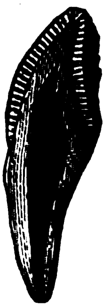

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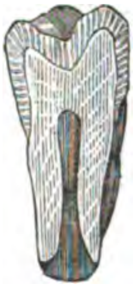

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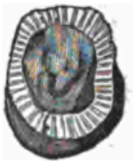

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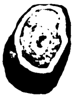

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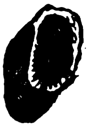


PLATE IV.

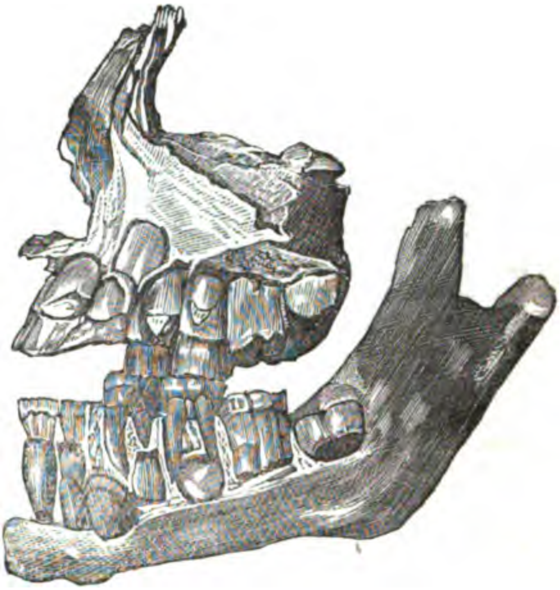
Fig. 1. One side of the upper and lower jaw of a subject about eight or nine years of age, where the incisores and cuspidati of the fœtus were shed, and their successors rising in new sockets; showing likewise the two grinders of the child, with the bicuspides forming underneath. The adult grinder was ready to cut the gum; and the second grinder of the lower jaw is lodged in the root of the coronoid process, and in the upper jaw it is in the tubercle.

Fig. 2. Part of the lower jaw cut through at the symphysis. The incisor of the child is standing in its socket, and the adult incisor forming in a distinct socket underneath.

Fig. 3. Another view of the same piece of the jaw, to show that the bicuspides are formed in distinct sockets of their own, and not in the socket of the grinder which stands above.

PLATE IV.

Fig. 1.



2.

3.

PLATE V.

Fig. 1—2. The lower and upper jaw of a fœtus, from which part of the gum and bony socket is taken off, to expose the membrane which encloses the teeth.

Fig. 3. The lower jaw of a new-born child, where this inclosing membrane is opened, to show the bodies of the teeth which were covered by it. The blood vessels which run in its substance are also exposed.

Fig. 4. That part of the jaw and gum which contains the cuspidatus: the whole is a little magnified. The membrane is opened and turned off on each side, and the fore-part is turned down: the upper part of the pulp is covered with its bony shell, which is seen by its want of vessels.

Fig. 5 & 6. The pulp of a cuspidatus, and the pulp of a grinder, magnified. The ossifications are removed to show that the pulps are of the same shape with the teeth which are formed upon them. As far down on the pulp as the vessels are seen, the ossification had advanced; which shows that it is more vascular where the operation of ossification is going on. The lower ragged edges represent the borders of the capsulæ turned down.

Fig. 7. One of the grinders of the lower-jaw, sawed down to expose the two cavities or canals leading to the body of the tooth, where they unite and form a square cavity. In these two canals are seen two arteries, which run on to the common cavity, and there ramify. The veins are not injected. The whole is magnified. In the body of the tooth may be observed a number of strata, each of which is lost in the circumference of the tooth.

Fig. 8. An incisor prepared and magnified in the same manner, showing the same circumstances in that tooth.

Fig. 9. The production of the permanent rudiment by means of a process given off from temporary, shown in a lower incisor.

Fig. 10. The rudiments in a more advanced stage; the permanent being now inclosed in its proper socket, though still connected with the temporary.

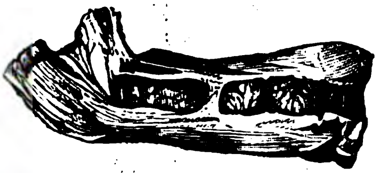
Fig. 11· The connection between the temporary tooth and the permanent rudiment, as it exists after the former has passed through the gum.

Fig. 12. A view of the lower-jaw, after the whole temporary teeth have passed through the gums, showing the relative position of the temporary teeth, and the rudiments of the permanent at this period.

Fig. 13. Shows the formation and cavity of the fangs of the molares. The upper row are those of the lower-jaw, and the lower those of the upper. A A, *a a* is the common cavity in the body of the tooth; which in the second, *a a*, is deeper than in the first. B shows the bony arch thrown over the mouth of the cavity, and dividing that into two openings, which give origin to the two fangs. C D D the progress of these fangs. F a molaris of the upper-jaw where the mouth of the cavity is a little tucked in, at three different points from which three ossifications shoot. G shows these ossifications, and the begining of these fangs. H I K show the gradual growth of these fangs.

PLATE V.

Fig. 1.



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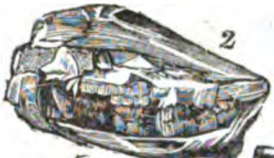

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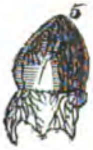

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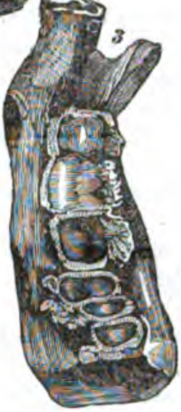

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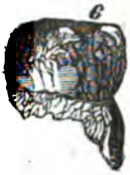

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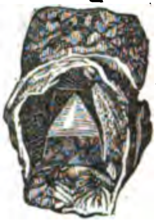

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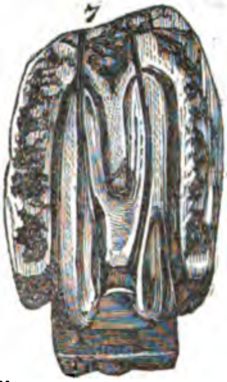

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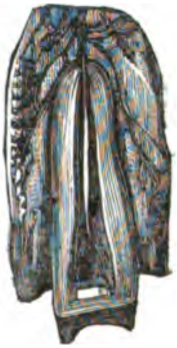

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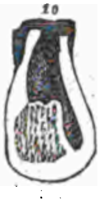

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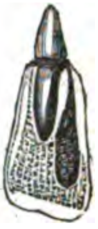


Fig. 13.

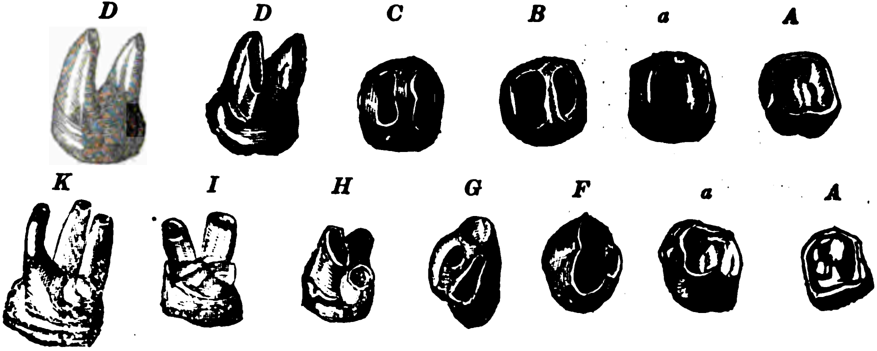


PLATE V.

Fig. 14 Is a comparative view of the incisors and grinders of the child and adult; for the better understanding of which they are sawed down the middle, showing, in a side view, the gradual increase of these teeth. The uppermost row is of the child, and the lower of the adult. *a b c d* show the gradual growth of the body, fangs and cavity of the incisors of both ages. *e f g* show these circumstances in the grinders.

Fig. 15. 1—7 show the gradual growth of a single tooth, from its formation nearly, to its being almost complete.

Fig. 16. A series of grinders of the child, from their being complete, to their utmost decay. *a* is a grinder of the upper-jaw nearly complete, in which the three fangs are almost formed. *b* has some of its fang absorbed. *c* more. *d* still more. *e* nearly all gone, and *f* the whole of the fangs gone, only the neck and body remaining.

Fig. 17. A series of incisores in the same state. No. 1. a completely formed tooth; 2, the fang somewhat decayed; 3, more so; 4, still more; 5, the fang almost gone; and 6, the whole fang gone, the neck and body only remaining.

Fig. 18. A horse's tooth that was just ready to be shed. The three parts of the tooth, which stand up, inclosed the rising end of the young tooth. This is all that was left of a long tooth.

PLATE V.

Fig. 14.

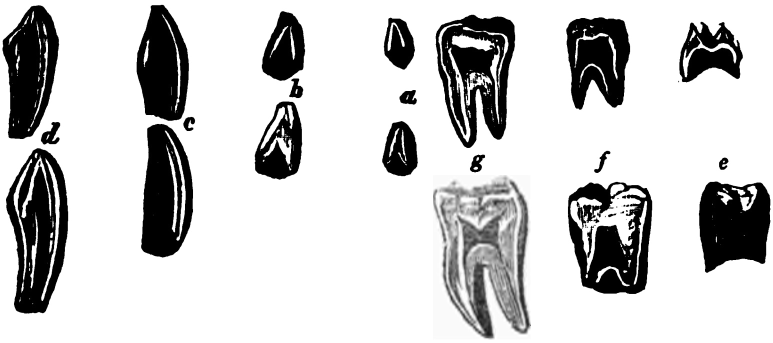


Fig. 15.

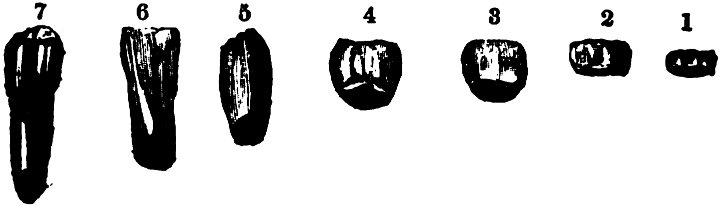


Fig. 16.

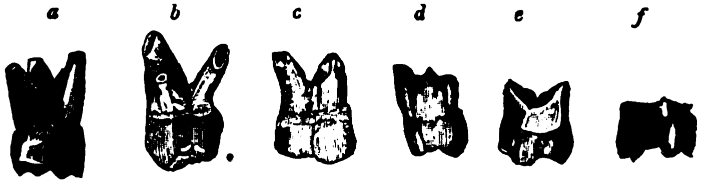


Fig. 17.

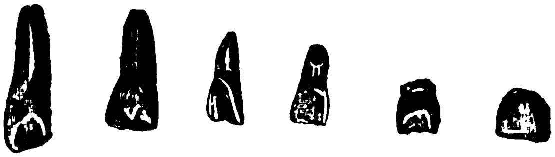


Fig. 18.

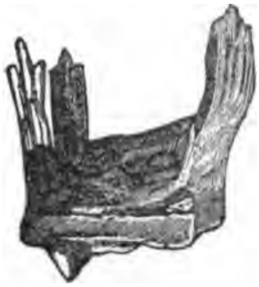
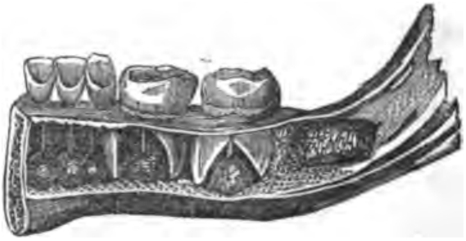


Fig. 12



DENTOLOGIA:

A POEM

ON THE DISEASES OF THE TEETH,

AND

THEIR PROPER REMEDIES.

BY SOLYMAN BROWN, A. M.

WITH NOTES,

PRACTICAL, HISTORICAL, ILLUSTRATIVE, AND EXPLANATORY,

BY

ELEAZAR PARMLY, DENTIST.

NEW-YORK.
1840

PREFACE.

On receiving the following poem, as a token of friendship from the author, believing that it possessed no ordinary merit as a production of talent and intellectual research, in addition to much valuable instruction conveyed in a pleasing form, I submitted the manuscript to rigid criticism. It was carefully examined by two gentlemen of this city, who are as distinguished for their fine taste in literature, as they are celebrated as poets and authors. These gentlemen urgently recommended the publication of the poem, on the grounds of its useful tendency, as an essay on a subject of general interest, and as a production honourable to American literature.

It occurred to me that I might make selections from the various authors whose works are in my possession, and append them to the essay, in the form of notes, illustrating and confirming the general doctrine of the poem. If these notes shall afford either rational amusement or useful instruction to any of my friends and fellow citizens, my only object will have been fully attained.

Some years ago I had the honor of laying before the public my views with regard to the profession which I had embraced. Having previously enjoyed the advantage of a friendly intercourse with the most distinguished dentists in Europe, I had gathered from them such instructions as enabled me to adopt a decided course of practice, and my subsequent experience has but confirmed and established me in the opinions which I then presented to the world.

I am not aware that the attempt has ever before been made, to write in English verse, a work inculcating the doctrines of dental science, embracing the diseases of the teeth, together with the means of their prevention and cure. On a subject so unpromising, I think all will agree with me in saying, that the author has succeeded beyond all reasonable expectation, in his design of investing the sober form of scientific truth, in the eloquent and glowing language of poetic fancy; and I cannot for a moment doubt that my professional acquaintaces, to whom I most respectfully dedicate this little volume, will be enabled to gain an adequate knowledge of the general principles and real importance of the dental art, through the lucid medium of this poem, in the most pleasing manner.

Within the last fifty years, very great improvements have been made in the various departments of our art, but that which results in the most enduring and substantial advantage to mankind, and which therefore deserves to be the most highly prized, is the very perfect manner in which the natural teeth are now preserved in a sound and healthy condition, by the skill of the well educated practitioner. The success of a few individuals in this branch of practice, has induced many to assume the name of dentist, who are utterly unqualified to perform in a proper manner the most unimportant and trifling operation upon the teeth. Hence it is that we hear every day of the painful sufferings and lasting injuries which result from the malpractice of incompetent pretenders to dental knowledge. Whole sets of teeth are daily sacrificed at the shrine of stupidity; and the evil will never be arrested, until the good sense of those who have occasion for the intervention of art, shall be more careful in selecting the person to whom they intrust organs so useful, so ornamental, so indispensable to health and comfort, as the teeth. So long as there is no statute to protect the citizen on this subject, his common sense, enlightened by experience, must be his law and his protection.

The operation of supplying artificial teeth, is one which for some years I had relinquished, in consequence of being unable to attend to it, and at the same time, to do justice to what I consider to be the more important, and, therefore, the first object of dental surgery; but having had for more than four years past, the valuable assistance of my kinsman, Mr. Jahial Parmly, whose mechanical tact and ingenuity are not surpassed, I have associated him with me, for the purpose of enabling him to devote his time exclusively to that branch. His success during the last two years demonstrates the great advantage to be derived from this division of labor, by which each department of the profession is practised by distinct individuals. It operates like a similar distribution of labor in the other arts and sciences, ensuring a greater degree of excellence in the results.

PREFACE.

The improvements that have been made during the last few years, in the manufacture of mineral teeth, have induced me to make extensive provision for conducting this part of the business, in the hope that still farther improvement may bring this interesting branch of our art to such a state of perfection, as to render them a substitute in most cases, for human and animal teeth, which are subject to speedy decay. Knowing no person whose mechanical skill and scientific acquirements so well qualify him for such an undertaking, I requested my friend, Mr. Brown, to join me in perfecting an art so desirable, and promising so many advantages. From the rapid improvement which he has made in the manufacture and mechanical adaptation of these teeth, as well as from my long acquaintance with his personal character, I am happy in believing that he will add one to the number of those who contribute to the dignity and usefulness of the profession; the benefit, comfort, and convenience of whose labors, will be acknowledged by thousands. If those who are intending to practise as dentists, would qualify themselves in a similar way by going through with a regular course of practical instruction, with an experienced dentist, they would soon elevate a profession to its merited rank, which is now too often degraded by ignorance and presumption.

ELEAZAR PARMLY.

No. 11 *Park Place,*
New-York.
October 19*th*, 1833.

CANTO FIRST.

ARGUMENT.

Invocation to living beauty as seen in the human countenance.—Importance of personal charms to the female sex.—Man a natural physiognomist.—Mental and moral qualities mirrored in the features.—Original beauty of the human race.—Beauty of angelic natures when purified from the stains of mortality.—Subject of dentistry proposed.—Universal law of nature in regard to human teeth.—Importance of good dental practitioners.

CANTO FIRST.

No goddess born in blue-eyed Juno's reign,
Or fair-haired sister of Apollo's train—
No coy and quivered Driad of the woods,
Or laughing Naiad of the dashing floods—
Do I invoke ;—ye fabled forms—retire !
Let breathing loveliness my notes inspire :—
To thee, my cherished friend ! the strains belong,
And LIVING BEAUTY animates my song.

This magic spell that mirrors every grace
Of woman's heart, in lovely woman's face ;
This speaking index of the polished mind,
In virtue pure, by virgin truth refined ;—
Is love's own banner, gracefully unfurled,
To fix affection, and enchant the world.

Without its aid, how hard were woman's lot !
To sigh neglected, and to die forgot ;
Though nature's genial fires unceasing burn,
To live unloved, and love without return !
For well we know that all of human kind,
Read in the face the features of the mind ;
The soul's bright forms forever fresh and fair,
Wit, worth, and modesty, are pictured there.

Say not—perverted taste alone descries
An intellectual light in radiant eyes ;

Nor think Lavater's favorite science vain,
That guides the choice of every rural swain,
In search of worthy love:—for well he knows,
That when the graceful meadow-lily blows,
'Tis genial spring; and when the mantling vine,
Round the gray oak its wreaths is seen to twine,
Laden with purple fruit—that summer's showers
Have nursed to life the verdure and the flowers.
So, in the features of Myrtilla's face,
The rustic Corydon has learned to trace
Each soft affection of her glowing mind;
With what delighted and to whom inclined.

You say, perchance, "Is woman then approved
For outward charms, and but for these beloved?
Shall form and feature for all faults atone,
And mere external beauty reign alone?
By reasoning man is mental worth despised,
And but for pageantry is woman prized?"
'Tis well inquired; but mark the just reply:—
As glittering stars adorn the cloudless sky,
And smiling rainbows, when the storm is done,
Announce the bursting splendors of the sun;
So beams of lambent light that sportive play
In woman's face, proclaim interior day;
And modest sweetness, with that light combined,
Bespeaks her nature gentle and refined.

Thus, too, the cherub graces that adorn
The smiling babe in childhood's sunny morn,
Reveal the pureness of that virtue given,
The charm of earth and miniature of heaven.

Nor less does manhood's firmer brow disclose
The master passion whence his action flows.

If glory, lucre, love, his heart inspire,
See in his lineaments the raging fire;
If war impel, behold him charge the foe,
His eyes' red lightning mingling with the blow;
In search of gold, see meanness in his air,
And Gripus' sordid wrinkles furrowed there:—
Or, fired with love, survey his altered mien;
Fair vernal blossoms decorate the scene,
From every flower the honeyed sweet he sips,
And burning eloquence is on his lips.

In times of old, those happier golden years,
Ere man had learned to drink the orphan's tears
And widow's sighs, and count them richest wine,
What beauty decked the "human face divine!"
Then all was loveliness:—the ruling soul
Held o'er the world, unlimited control;
The forest knew no monster; and the grove
No voice but that of melody and love;—
While man acknowledged virtue as his guide,
The lamb and lion slumbered at his side;
'Twas then, nor thorn nor thistle cursed the soil,
But plenty crowned the gatherer's pleasing toil,
Nor plague nor tempest in such skies appear,
But health and sunshine circle round the year.

And who can tell, when virtue soars away
To range the fields of unexpiring day,
Where Love unveils her charms to every eye,
And Truth unrobes his manly majesty;
Say, who can tell, how beautiful and fair,
Those angel-forms—those heavenly natures are?

Amid the bowers of ever pure delight,
Whence heaven's unclouded sun excludes the night,

In fragrant groves arrayed in emerald green,
Where varying landscapes animate the scene,
Thou, sainted Mother ! find'st that blest repose,
Which sweet celestial innocence bestows,—
To friendship there, thy glowing heart is given;
Thy hands, to all the charities of heaven ;
Thy voice, to melody ; thine eye, to see
The radiant bow that spans eternity !

If nature thus, instructive, deigns to trace
The soul in every feature of the face ;
If lovely virtue there displays her charm,
And guilty passions ring the loud alarm ;
Arouse, thou slumbering fair ! and learn to see
That heaven commits thy destiny to thee.
Is virtuous love thy aim ? Deserve the prize :
Or friendship ? Know that here the secret lies :—
To be—and to appear what men approve :—
Their friendship thus is won—and thus their love.
Be mine the pride in measured verse to raise
A plain but lasting monument of praise,
To that distinguished science, known of yore,
Designed departed beauty to restore—
The Dental Art, by Greece and Rome admired,
When woman to imperial thrones aspired ;—
Those mighty states were both to ruin hurled,
But lo ! their art survives to bless the world. (1)

Full well I know 'tis difficult to chime
The laws of science with the rules of rhyme ;
Plain vulgar prose, my subject seems to claim,
Did not ambition prompt the higher aim,
The nobler pride, by more laborious care,
To speak in numbers that shall please the fair.

To woman, love's first melodies were sung,
In nature's prime, when earth and time were young,
And every bard, in each succeeding year,
Has framed his lays for woman's listening ear:—
Nor let the grovelling soul that cleaves to earth
Dare to pretend to comprehend her worth;
When pure—she's purer than the virgin snow,
On Andes' top, when summer smiles below;
And more delight o'er life her sweetness breathes,
Than all besides that heaven to man bequeathes.

Since beauty thus bestows the kind caress,
And oft audacity secures success,
Be mine the task to join the tuneful throng,
And blend instruction with the charms of song.

When man was fashioned by the Power Supreme,
Strange and mysterious as the fact may seem,
And cause of wonder; to his frame was given
Peculiar structure by the hand of heaven:—
Imperious laws distinctively his own,
To other animated forms unknown.

Among these laws which science learns to trace,
Through every varying tribe of human race;
From arctic regions, clad in endless snows,
To where the tropical sirocco blows,
As well where elegant refinement smiles,
As far remote, among the ocean isles,
One common destiny awaits our kind;—
'Tis this, that long before the infant mind
Attains maturity—and ere the sun
Has through the first septennial circle run,
The teeth, deciduous, totter and decay,
And prompt successors hurry them away. (2)

This every mother knows, though not aware,
How precious then the kind maternal care
That holds incessant watch, lest nature's course
Should meet obstruction from some counter force.
For oft the predecessors, lingering, claim
Undue connexion with the vital frame,
And, like a monarch, vindicate alone,
The questioned title to their ivory throne.
So mothers, proud of each surviving charm,
Regard their daughters' beauty with alarm,
Lest these to admiration should aspire,
Before themselves are ready to retire.

But nature's course is fixed, and man must yield,
For 'tis but madness to contest the field
With conquering fate: and holy heaven withdraws
Its smile from all who violate its laws.

Be watchful, ye—whose fond maternal arm,
Would shield defenceless infancy from harm, (3)
Mark well the hour when nature's rights demand,
The skilful practice of the dentist's hand.
But use discretion:—oft imposture wears
The same external guise that merit bears;
And bold pretenders show consummate wit,
By duping others to abandon it.

Beware of those whom science never taught
The hard but useful drudgery of thought,
For while in indolence their years have run,
They ask the wealth that industry has won:—
Can charity for such desire success?
No, let them eat the bread of idleness.

On just desert let all success attend,
And patient merit never want a friend.(4)

To thee, companion of my happiest days,
The general voice awards superior praise;
'Twas nobly won, by sacrifice of ease,
'Mid raging tempests and through stormy seas.

END OF CANTO FIRST.

CANTO SECOND.

ARGUMENT.

The first dentition, or the growth and progress of the milk teeth.—Operation of lancing the gums ; fatal consequences of neglect, or of inefficient remedies,—The second dentition, or the formation and arrangement of the permanent teeth —Extraction in case of interference, or mal-arrangement.—Distortion and deformity resulting from negligence.—Perfection of the material of which the teeth are composed.

CANTO SECOND.

The first dentition asks our earliest care,
For oft, obstructed nature, laboring there,
Demands assistance of experienced art,
And seeks from science her appointed part.(5)
Perhaps ere yet the infant tongue can tell
The seat of anguish that it knows too well,
Some struggling tooth, just bursting into day,
Obtuse and vigorous, urges on its way,
While inflammation, pain, and bitter cries,
And flooding tears, in sad succession rise.(6)

The lancet, then, alone can give relief,
And mitigate the helpless sufferer's grief;
But no unpractised hand should guide the steel
Whose polished point must carry wo or weal:—
With nicest skill the dentist's hand can touch,
And neither wound too little nor too much. (7)

Be prompt to act:—'tis dangerous to delay,
Since life awaits the issue of a day:—
Reject the gentler means:—employ the best:—
Let unobstructed nature do the rest. (8)
This rule neglected, many a smiling form,
With beauty bright, and life blood glowing warm,

Its parents' pride, a floweret in its bloom,
Descends lamented to an early tomb. (9)

Nor less the danger when the first array—
The infant teeth—alternately decay,
Or yield succession to a hardier race
With marked reluctance ; for, in either case,
Neglect will bring repentance in its train ;
In one, deformity ;—the other, pain (10)
Or fell disease ;—but timely care may still
Avoid the danger, or repair the ill. (11)
If pain ensue, and neighboring parts inflame,
Extraction is the cure ; and 'tis the same
If nature's law, obstructed in its course,
Should meet resistance from opposing force : (12)
For this resisting force howe'er remote,
Meets in the dental art its antidote ;
Pain flies its presence ; anguish wipes her tear ;
To hope's fond vision rainbow-hues appear ;
Pale, trembling beauty hushes her alarms,
And beaux, admiring, own her added charms.

Now mark the contrast in some hideous face,
Robbed by neglect, of symmetry and grace :—
Behold those organs, formed on nature's plan,
To serve important purposes to man ;
To form the sounds in which his thoughts are drest,
His wishes uttered, and his love confest ;
To fit his solid food of every name,
For healthy action on the general frame ; (13)
Behold these organs, wrested by abuse,
From wisest purpose, and from noblest use,
Deranged, displaced, distorted, set awry,
Disgusting objects of deformity ! (14)

Such mal-formations hardier man perplex,
But, with more grief, afflict the softer sex:—
For when with grace, deformity is joined,
As one base passion desolates the mind,
So one contrasted fault alone disarms
All conquering beauty of a thousand charms.

Let azure eyes with coral lips unite,
And health's vermilion blend with snowy white;
Let auburn tresses float upon the gale,
And flowery garlands all their sweets exhale;
If once the lips in parting, should display
The teeth discolored or in disarray,
The spell dissolves, and beauty in despair
Beholds her fond pretensions melt in air.

But learn the remedy:—the dentist's skill
Subjects disordered nature to his will:—
As great commanders hear without alarms,
The shouts of battle and the shock of arms,
And, when their troops, in broken ranks, incline
To wild confusion, bring them into line;
So he—the master of the dental art,
Can order, grace, and symmetry impart,
Where anarchy had else sustained alone
The undisputed title to his throne.

Such benefits this useful science lends
To earliest youth;—and yet its aid extends
To following years, assuaging mortal pain,
And oft restoring beauty's flowery reign.

The human frame, offspring of heaven's high will,
Displays throughout inimitable skill;

No part defective : none that perfect love
Could prompt unbounded wisdom to improve.
The eye, the ear, how wondrously designed
To serve as useful allies to the mind.
The heaving lungs, that drink th' aerial flood,
Imparting vigor to the vital blood ;—
The heart, that like a virtuous monarch, reigns,
And spreads delight through all its wide domains : (15)
How wondrous these !—yet see the hand divine
By equal skill displayed in every line,
In every feature of the perfect whole,
That acts in concert with the moving soul.

To this great law, that governs every part,
And rules " as perfect in a hair as heart,"
The teeth conform ; and hence it stands confest,
Their substance, form, and structure, are the best
That wisdom could devise for such a use,
And hence, defective, only from abuse. (16)

Not polished pearl from Ceylon's coral caves,
Or California's or Cumana's waves ;
From Indian hills, Golconda's lucid gem
That shines a star in Brama's diadem ;
Nor gold of Ophir, wrought by Aaron's skill,
To form the idol calf, and worshipped still,
Could act the part in nature's general plan,
Assigned these organs in the frame of man. (17)

END OF CANTO SECOND.

CANTO THIRD.

ARGUMENT.

[illegible] its effects on general health.—Intemperance in living.—Use of animal food.—Effects of [illegible] the teeth.—Cleanliness: neglect of it [illegible] of the teeth, and other diseases.—Fate [illegible] by her carelessness.—Caries, or decay of [illegible] teeth.

CANTO THIRD.

Oh Luxury ! the eldest born of wealth,
Thou foe to virtue, and thou bane of health ;
Insidious nursling in the lap of ease,
Whose breath is pestilence, whose smile disease ;
May suffering man yet see thee as thou art,
A greedy vampyre, feasting on his heart! (18)

Of all the ills that ante-date the doom
Of erring mortals, and erect the tomb
So near the cradle, shortening to a span
The fleeting life of transitory man,
The worst is luxury :—Infrequent flies
The lightning's fatal bolt ; the lowering skies
Are seldom darkened by the whirlwind's wrath,
Or loud tornado's devastating path.
Beneath the ocean wave though some expire,
And others by the fierce volcano's fire ;
Though savage war can boast his thousands slain,
On tented field, or bosom of the main ;
Yet few the victims of these fates malign,
Compared, intemperate luxury ! with thine. (19)

Wherever wealth and false refinement reign,
The pampered appetites compose their train ;

Remotest climes supply the varied feast,
But wisdom never comes a welcome guest;
The gormand, folly, bids the poison pass,
And drains destruction from the circling glass. (20)
The harmless flock, to cruel slaughter led,
Crowns high the board; for this the herd has bled, (21)
For this, the gay musicians of the grove,
Suspend forever all their songs of love! (22)
Earth, air, and ocean, each its part supplies
Of sentient life, to swell the sacrifice;
As though some fiend had sketched the darkest plan
Of bloody banquet for the monster—man! (23)

Though teeming earth bestows on honest toil,
In every climate and in every soil,
Their proper fruits, by nature's law designed,
The safe and luscious diet of mankind, (24)
Yet, see the race from flowery Eden stray,
To roam the mightiest of the beasts of prey!
See sensual man still smiling with delight,
While bleeding life is quivering in his sight!

But nature, sure to vindicate her cause,
Avenges each transgression of her laws;
Beware, rash man!—for every nice offence
Shall meet, in time, a dreadful recompence;
Nor flight can save—nor necromantic art,
Nor dext'rous stratagems elude the smart:—
For, lo, in fearful shapes, a haggard band
Of fell diseases, wait at her command.

'Tis thus derangement, pain, and swift decay,
Obtain in man their desolating sway,

Corrupt his blood, infect his vital breath,
And urge him headlong to the shades of death.
No more his cheeks with flushing crimson glow;
No more he feels the sanguine current flow;
But quenched and dim his sightless eyeballs roll,
Nor meet one star that gilds the glowing pole! (25)

Amid this general wreck of health and ease,
Where every folly generates disease,
The teeth, in spite of nature's guardian care,
In all disorders of the system share,
Besides those ills peculiarly their own,
To other portions of the frame unknown.

If sloth or negligence the task forbear
Of making cleanliness a daily care;
If fresh ablution, with the morning sun,
Be quite forborne or negligently done;
In dark disguise insidious tartar comes
Incrusts the teeth and irritates the gums,
Till vile deformity usurps the seat
Where smiles should play and winning graces meet,
And foul disease pollutes the fair domain,
Where health and purity should ever reign. (26)

Behold Urilla, nature's favored child;—
Bright on her birth indulgent fortune smiled;—
Her honored grandsire, when the field was won,
By warring freeman, led by Washington,
Nobly sustained, on many a glorious day,
The fiercest fervors of the battle-fray;
Survived the strife, and saw at length unfurled
Our union-banner floating round the world;

Then found a grave, as every patriot can,
Inscribed "Defender of the rights of man."

Her sire, whose freighted ships from every shore
Returned with wealth in unexhausted store,
Was doubly rich:—his gold was less refined
Than the bright treasures of his noble mind.

And she herself is fair in form and face;—
Her glance is modesty, her motion grace,
Her smile, a moonbeam on the garden bower,
Her blush, a rainbow on the summer shower;
And she is gentler than the fearful fawn
That drinks the glittering dew-drops of the lawn.

When first I saw her eyes' celestial blue,
Her cheeks' vermilion, and the carmine hue,
That melted on her lips:—her auburn hair
That floated playful on the yielding air;
And then that neck within those graceful curls,
Molten from Cleopatra's liquid pearls,
I whispered to my heart:—we 'll fondly seek
The means, the hour, to hear the angel speak;
For sure such language from those lips must flow,
As none but pure and seraph natures know.

'Twas said—'twas done—the fit occasion came,
As if to quench betimes the kindling flame
Of love and admiration:—for she spoke,
And lo, the heavenly spell forever broke;
The fancied angel vanished into air,
And left unfortunate Urilla there:
For when her parted lips disclosed to view,
Those ruined arches, veiled in ebon hue,

Where love had thought to feast the ravished sight
On orient gems reflecting snowy light,
Hope, disappointed, silently retired,
Disgust triumphant came, and love expired!

And yet, Urilla's single fault was small:
If by so harsh a name 'tis just to call
Her slight neglect:—but 'tis with beauty's chain,
As 'tis with nature's:— sunder it in twain
At any link, and you dissolve the whole,
As death disparts the body from the soul. (27)

Let every fair one shun Urilla's fate,
And wake too action, ere it be to late;—
Let each successive day unfailing bring
The brush, the dentifrice, and, from the spring, (28)
The cleansing flood:— the labor will be small,
And blooming health will soon reward it all. (29)
Or, if her past neglect preclude relief,
By gentle means like these; assuage her grief;
The dental art can remedy the ill,
Restore her hopes, and make her lovely still. (30)

Yet, other evils may her care engage,
The offspring of an epicurean age. (31)
Destructive caries comes with secret stealth
T' avenge the violated laws of health:
Dilapidates the teeth by slow decay,
And bears them all successively away. (32)
So, silent Time, with unresisted power,
Labors at midnight in the lonely tower;
Corrodes the granite in the ivied wall,
And smiles to hear the crumbling atoms fall;—
Till all the mighty structure disappears,
A dream forgot, a tale of other years. (33)

When caries, thus, the solid tooth destroys,
That sullen enemy to mortal joys,
The tooth-ache, supervenes:—detested name,
Most justly damned to everlasting fame! (34)

They say who most have felt, and best should know
The power of this most execrable wo,
That when Pandora's box of mortal pains,
Was first unlocked among the wondering swains,
To every vice its kindred grief was sent,
And every crime received its punishment,
Except intemperance:—no *single* ill
Could heaven's irrevocable law fulfil,
The fixed resolve, th' omnipotent decree,
That each offence should meet its penalty;
Then all these mortal woes in one were joined,
And tooth-ache came, the terror of mankind! (35)

Thou haggard fiend! of hellish imps the worst,
To mercy deaf, by sorrowing man accurst; (36)
Though cheerless days made desolate by thee,
And long, long nights of sleepless agony,
Have marked thy fearful reign in days of yore,
Thy power is crushed,—thy scorpion-sting no more
Affrights the helpless, for the dental art
Commands thy gloomy terrors to depart,
Then wipes from beauty's cheek the tears that burn,
And bids her roses and her smiles return.

END OF CANTO THIRD.

CANTO FOURTH.

ARGUMENT.

Remedies for the various disorders of the teeth.—Filing away carious portions.—Stopping carious cavities with gold foil.—Loss of the teeth occasioning the necessity of substituting others —Of artificial teeth—Eulogium on those who labor for the benefit of mankind.

CANTO FOURTH.

Auspicious art! before whose magic spell,
Disease and pain shrink shuddering back to hell,
Whose touch, like that mysterious gem of old,
That changed all baser metals into gold,
Restores the faded floweret to its bloom,
And saves the victim from the threatening tomb;—
Direct my song and teach me to rehearse
In the smooth numbers of enchanting verse,
Those varied stratagems employed by thee,
To soothe the pangs of frail humanity.

In nature's vast domain, with curious eye,
Search through the earth, the ocean, and the sky;
Ask of the beast that crops the flowery plain,
And fish that threads the billows of the main;
Ask of the bird that journeys on the wind,
And reasoning man for nobler flights designed;—
If any link in wide creation's chain
Of golden harmony, produces pain;
Or, in the general frame, is found a flaw,
But from resistance to wise nature's law?

And this resistance comes from man alone,
Who vainly thinks to shake th' Eternal's throne;

Who spurns the good to humble virtue given,
And madly builds himself another heaven.
Folly with wisdom holds unequal strife,
In bold infraction of the laws of life.

If then the teeth, designed for various use,
Decay and ache, 'tis only from abuse ;
And lo, triumphant art can well ensure,
At least a remedy, if not a cure.

Whene'er along the ivory disks, are seen,
The filthy footsteps of the dark gangrene ;
When caries comes, with stealthy pace to throw
Corrosive ink spots on those banks of snow—
Brook no delay, ye trembling, suffering fair,
But fly for refuge to the dentist's care.
His practiced hand, obedient to his will,
Employs the slender file with nicest skill ;
Just sweeps the germin of disease away,
And stops the fearful progress of decay. (37)

Fair science, thus, with timely care combined,
Becomes the faithful friend of human kind ;
Reverses, oft man's miserable fate,
And serves his cureless ills to mitigate :
Extracts the poison from his tainted breath,
And plucks the feather from the shaft of death.

From long neglect which nothing can atone,
Should caries excavate the solid bone,
Destroy the bright enamel in its way,
And lay the nerve quite naked to the day ;
Still dental science, subject of my song,
Invents expedients to redress the wrong.

'Tis then the world's bright god, so highly prized,
That earth and heaven are daily sacrificed
Upon its altar, wrested from abuse,
Performs in nature one substantial use:—(38)
Unlike the sacrilegious part it bore
At thundering Sinai's trembling base of yore,
When Israel's blooming daughters gave their gold,
That Aaron, frail and impious priest, might mould
The idol calf—unlike its task assigned,
To bribe, and buy, and subjugate mankind;
To purchase love and friendship; and descend
A heritage where noble virtues end;
To be, with those who basely covet it,
The villain's honor, and the dunce's wit;
The shining claim that elevates the clown
To all the stupid mummery of the gown;
The lure by which the genius oft is led
To give the termagant his bridal bed;
The current bribe to hireling virtue given;
The bartered substitute for truth and heaven!

This idol god, that thus usurps the skies,
The artist now to noblest use applies;
Transmutes its form with Cæsar's head impressed,
Or in Napolean's robes imperial dressed,
To soft and yielding lamina;—with skill
The practiced dental surgeon learns to fill
Each morbid cavity, by caries made,
With pliant gold:—when thus the parts decayed
Are well supplied, corrosion, forced to yield
To conquering art the long contested field,
Resigns its victim to the smiles of peace,
And all decay and irritation cease.

Yet oft, through ignorance or negligence,
'Twere hard to say, through lack of common sense,
The fatal spoiler works his secret way,
With noiseless industry from day to day,
All undisturbed, till, lo, the work is done
That leaves to art new conquests to be won.
'Tis thus the solid teeth, from year to year,
By folly or misfortune disappear,
Announcing man's inevitable doom,
And pointing to the portal of the tomb. (39)

But mark the triumphs of victorious art,
When sighing fair ones see their hopes depart;
When speech unsyllabled offends, and when
The lisping notes of childhood come again:
When vicious chyle from undigested food,
Abates the vital vigor of the blood;
Then—ever prompt to dry misfortune's tears,
Again the artist's magic skill appears.

In climes remote, where sacred Ganges flows
From Thibet's mountains of eternal snows,
Or far beyond the golden Gambia's source,
Where Lander sought the Niger's mystic course;
The lordly elephant, in hoary pride,
Toils through successive ages to provide
The ivory tusk; the fertilizing Nile
Breeds the huge Hippopotamus, whose spoil
Supplies new treasures;—and the ocean wave
Nurtures the sea-calf in his rocky cave,
To furnish fit materials to impart
Increased importance to the favorite art.

And now, while every sister art aspires
To light her torch at more celestial fires,

The Dentist, e'en, too proud to lag behind
The bold aeronaut who rides the wind,
Or the adventurous mariner that braves,
With bellowing steam, the fury of the waves,
O'erleaps the bounds to ancient science known,
And to all past experience adds his own.
Thus, strange to tell, is daring genius led
By truth and heaven, exultingly to tread
Untrodden fields in nature's realms afar,
Beyond the milky way or polar star.

Behold the dental artist's bright array
Of magic wonders glittering to the day ;—
The white stalactite from the mountain cave ;
The branching coral from the ocean wave ;
The crystal from the rock ; the gem that shines
With decompounded light from Indian mines ;
And alabaster ; and that yellow stone
That graces jealous beauty's virgin zone ;
The brightest gifts of every varying clime,
Resplendent spoils of nature and of time ;—
And see, obedient to his ruling will,
Their forms transmuted by his plastic skill,
Till, as when Cadmus, coveting to reign,
With teeth of dragons sowed the Theban plain
A marshalled host sprang vigorous from the glade,
In blazoned arms and towering plumes arrayed ;
So spring to light, while love her flag unfurls,
A shining panoply of orient pearls. (40)

With aids like these, from nature's store supplied,
And following nature man's unerring guide,
The artist bodly ventures to restore
The dental arch, till, perfect as before,

The teeth in order greet the wondering sight,
A theme of admiration and delight!

Let servile tongues applaud the glittering state
That decks the vain, hereditary great;
The circumventive arts of dark chicane,
That mark the general game of ***loss and gain;***
The statesman's tricks, in search of sordid pelf,
To prove that none are patriots but himself;
The feats of arms that strew th' embattled plain
With mangled limbs, and crimson all the main;
Be mine the task to render just applause
To those who toil in virtue's nobler cause;
Whose serious thoughts and labors are designed
To mitigate the woes of human kind;—
Whom works of usefulness and love employ,
Like Him who fills unnumbered worlds with joy. (41)

END OF CANTO FOURTH.

CANTO FIFTH.

ARGUMENT.

Apostrophe to health.—Sympathetic action of disease on the system—Destructive influence of disordered teeth on the lungs, digestive organs, and nervous structure.—Influence of the teeth on health and longevity, arising from their relation to the solid aliments of man.—Importance of the teeth to the arts of eloquence and vocal music.—The commander addressing his troops on the eve of battle.—The advocate at the bar of justice, pleading the cause of injured innocence.—The venerable pastor exhorting his flock to pursue the path to heaven.—The fate of Seraphina.

CANTO FIFTH.

Come, rosy Health! thou pretty sun-burnt maid,
And laugh with Labor in the noon-day shade;
Awake with Temperance at the peep of dawn,
And brush the dews that deck the fragrant lawn.

Enchanting nymph! how often have I seen
Thy quick elastic footstep on the green,
At summer eve among the reaper train,
The favorite belle of many a rustic swain;
The village minstrel on the turf reclined,
To melting music all his soul resigned;—
The hills, the dales, the fields, and woods around
Seem wrapped in silence, listening to the sound,
Save that one hoary rock across the plain,
Returned in echo every silver strain.

Gay, blushing Health! without thy freshening glow
Protracted life were only conscious wo;
And earth's unnumbered joys would end in pain,
If thou wert banished from the fair domain.
Be thou the blithe companion of my way,
Through cheerful years, to life's remotest day;
Though babbling fame should eulogize me not,
Nor fortune gild my solitary cot.

Ye lovely fair, who deprecate the doom
Assigned by general taste to tarnished bloom,
Be wise in time—'tis folly to delay ;
Cast all your vile cosmetic drugs away ;
Exchange the shallow artifice of dress
For nature's more enchanting loveliness ;
And know that blooming health alone abides
Where chaste and temperate cleanliness resides.

As, when the sun from burning Cancer throws
His radiant fires till all the ether glows,
The spotted plague and fever's frantic train
In pop'lous cities hold their ghastly reign,
By filth engendered—by intemperance fed,
Till half the living sink among the dead,
While pale affright, with desolating brand,
Spreads consternation through the trembling land;
So, in the breathing microcosm of man,
Each slight derangement of the general plan,
Each local malady of every name,
Disturbs throughout the sympathizing frame.

But most the teeth, for various use employed,
Disturb the system when themselves destroyed ; (42)
For when these organs yielding to decay,
In morbid exhalations waste away,
The vital air, from heaven's aerial flood,
That warms with life the circulating blood,
Bears to the heaving lungs the deadly bane,
Where all its noxious qualities remain,
While every breath the poisonous draught repeats,
And spreads disease with every pulse that beats. (43)

Nor less the nervous sympathy conveys
Each dental malady a thousand ways, (44)
For, as the witching music of the lyre,
Is heard along each vibratory wire,
What time the heaven-instructed minstrel flings
His hurried hand among the magic strings :—
So when disease invades the dental arch,
And strides in anguish on his angry march,
His burning touch, like the electric flame,
Flashes through every fibre of the frame ;
Fever ensues, with all its raging fires,
And oft the maniac sufferer expires. (45)

And yet of all the evils that accrue
From loss of teeth, though neither small nor few,
The chief is this ;—'tis nature's general plan,
That all the solid aliments of man,
Before admission to the secret shrine,
Where vital chemistry, with skill divine,
Transforms the cruder mass to milky chyme,
By nature's metamorphosis sublime,—
Should suffer comminution ;—hence we find
The dental organs formed to cut, and grind,
And masticate the food :—this rightly done,
The process of digestion, well begun,
Results in health to each dependant part,
That feels the living impulse of the heart. (46)

But when, from loss of teeth, the food must pass,
A crude, and rigid, and unbroken mass,
To the digestive organs : who can know,
What various forms of complicated wo,
May rise terrific from that single source ? (47)
For nature, once resisted in her course,

Breeds frightful things—a monstrous progeny!
Consumption, fevers, palsy, leprosy,
The hobbling gout, that chides, at every breath,
The lingering pace of all-destroying death;
And apoplexy, dragging to his doom
The half surviving victim of the tomb.

See thus the mortal life of erring man,
Reduced by vice and folly to a span;
And years of joy alloted him below,
Exchanged for fleeting months of bitter wo!

The Power Supreme, who gave all being birth,
And fashioned man the sovereign lord of earth,
Free-will and understanding both bestowed,
The likeness and the image of his God;
And gave what beast, bird, fish, could never reach,
The all-controlling attribute of speech.
Transcendant gift! that elevates our kind
To all the lofty pleasures of the mind;
To social joys;—to all the polished arts,
That spring from sympathy of kindred hearts!

This power of speech, in which are nicely wrought,
All shades of feeling, and all forms of thought;
The silver cord that binds all human kind;
The circulating medium of the mind;—
Results from organs formed with heavenly art,
To act in concert their appointed part.
With these the dentals hold the foremost place,
Since, to their loss or injury, we trace
The greater part of those imperfect sounds
With which the general speech of man abounds.

Behold the orator, in church or state,
When warm persuasion, or when cool debate
Impels the common mind to daring deeds,
While virtue triumphs, or a nation bleeds.
His vocal organs, trained with patient skill,
Perform their part, obedient to his will.
If rampant war, with all its dire alarms,
Employ his eloquence; the shock of arms,
The shouts of armies, and their dying groans,
Roll on his quivering lips in silver tones,
While murmuring crowds, impatient still to go,
Rush to the pathway leading to the foe!

If lovely innocence, when fair and young,
Fall by the vile seducer's lying tongue,
And seek redress where justice holds her throne,
The trembling wretch, unfriended and alone,
And bathed in bitter tears, invokes the laws,
And calls on heaven to vindicate her cause:—
The orator appears:—his searching glance,
A moment, eyes the culprit wretch askance,
That crushed the bleeding flower:—words follow next,
And as the foaming mountain torrent, vext
By the projecting cliff, in angry bound,
Decends in cataracts, with thundering sound,
Till all the desert wild, and savage rock,
And hoary mountain, tremble at the shock,
So does the stream of eloquence impart
A palsied shuddering to the villain's heart!
The listening crowd reply with loud acclaim,
While Emmet lives—immortal heir of fame!

On yonder hill, which freshening shades invest,
Beneath whose spreading boughs forever rest

The mouldering ashes of the son and sire,
The village church erects its modest spire.
Behold, each Sabbath morn, with measured pace,
The silent groups that seek that hallowed place,
And mark, how meek devotion worships there,
With heart uplifted in the hour of prayer.

The morning song of love is sweetly sung,
While heaven's own flame inspires each tuneful tongue;
And see—the venerable man appears,
White with the hoary frosts of threescore years;—
The good old man, whose useful hours have flown,
To sooth all others' sorrows but his own;—
Whose daily labors to mankind are given,
In charity, but all his heart to heaven.
So pure the life this virtuous man has passed,
That all his powers are perfect to the last;
No borrowed lock to grace his brow aspires;
No optic glass his vigorous eye requires;
He lacks no single tooth that nature gave,
Nor asks a staff to guide him to the grave. (48)

With voice subdued, and unobtrusive mein,
He speaks of heaven,—he paints the flowery scene,
Where angel-natures—forms of purest love,
Meet in the bowers of innocence above,
To drink at living fountains, and be fed
On fruits immortal, and the living bread,
Till gushing tears fall fast from every eye,
And faith and hope look smiling to the sky.

Yet, in that choir that sung the morning song,
One vacant seat afflicts the listening throng;
One well known voice, admired so oft before,
For sweetest melody, is heard no more.

Is Seraphina dead, whose melting strains
Had won the hearts of all the neighbouring swains ?
Or does she now forsake the house of prayer,
And spurn her venerable pastor's care ?
Unjust suspicion ! tarnish not her fame,
Nor let reproach attaint her spotless name ;
For while her mellow voice obeyed her will,
She fondly lingered our musician still ;
And though by cruel fate compelled to part,
She leaves us all the homage of her heart.
To lonly solitude she gives her hours,
In shady copse, or shadier garden-bowers :—
In silent grief, and unconsoled, she pines,
And scarce to heaven's high will her soul resigns.
For, lo, the heavenly music of her lip—
So sweet, the laboring bees might stop to sip,
Has passed away ; discordant notes succeed,
And Seraphina's bosom lives to bleed.

Ye ask the cause : — by premature decay,
Two of her dental pearls have passed away ;
The two essential to those perfect strains,
That charm the soul when heavenly music reigns.
But fly, ye swains, to Seraphina fly,
And bid her fastly flowing tears be dry ;
Haste to her cottage, where in vain she seeks
To wipe the burning deluge from her cheeks ;
And when you find her, soothe her frantic mind,
And bid her cast her sorrows to the wind ;
In secret whisper this kind truth impart ; —
There is a remedy : — the dental art
Can every varying tone with ease restore,
And give thee music sweeter than before ! —

Thus, to desponding man in life's dark way,
The angel, mercy, points the opening day ;
And through the tear that trembles in his eye,
Reveals the glories of her kindred sky. (49)

END OF CANTO FIFTH.

APPENDIX.

NOTES.

(1) *But lo! their art survives to bless the world.*

Hippocrates, a lineal descendant of Esculapius, the first accurate observer, and the first eminent physician of which we have any definite account, flourished in Greece, about four hundred and sixty years before the Christian era. He describes in various parts of his works, as well the functions and period of appearance of the several teeth, as their principal diseases, and the plan of treating them, both by manual operations and by dentrifices.

At the commencement of the Christian era, we find in the writings of Celsus, a celebrated physician of Rome, very explicit instructions on the subject of several important operations on the teeth; and during the recent excavation at Pompeii and Herculaneum, several dental implements have been discovered, much resembling some of those in use at the present day.

Celsus treats of scarifying the gums, of extracting, scraping, and even of stopping teeth; and fixing loosened teeth with gold wire;—indeed, this last practice is alluded to in the twelve tables of the Roman laws.

The Latin poet, Martial, makes habitual allusion to artificial teeth, as worn by the ladies of Rome in his time.

The celebrated Arabian surgeon, Albucasis, in the tenth century, enters very extensively into descriptions of dental operations, and gives drawings of a great number of instruments, used in his time for extracting, scraping, loosening, and even of filing the teeth, a practice which had been introduced more recently than any of the others.

It was not till the seventeenth century that we have authentic records of the exercise of the profession of dentistry distinctly from that of surgery. Gillies, and other practitioners in France, received the title of surgeon dentists as early as 1622.

In the year 1700, persons destined for the dental profession were compelled, in France, to submit themselves to a regular examination; and it is from this period that we must date, in modern times, the regular establishment of this art, as a distinct branch of surgical practice.

Among those who distinguished themselves as dentists during the last century, were Berdmore. Fauchard, Geraufdy, Larini, Bunon, Mouton, Leclure, Bourdet, Aitkin, De Chemant, Ray, Moore, and Talma; and it is to the undivided attention of such men as these, that we must attribute the vast additions made during that period, to our knowledge of the structure and diseases of the teeth.

Of the authors who have written on the subject during the present century, it will be sufficient to mention here, Blake, Fox, Duval, Le Forgue, De la Barre, Beaume, Maury, Bell, Koecker, Fitch, and Hare.

There are many others whose experience would enable them to produce works highly useful to the world, and particularly to young practitioners.

Mr. Cartwright, of London, with whom I have the pleasure of a personal acquaintance, is known to be the most celebrated dentist now in Europe, but has not as yet made public his views, in relation to his practice. It is most earnestly to be hoped that he will shortly publish his opinions.

Mr. John Waite, who, for many years, not only had the most extensive practice, but was the best practitioner in London, died without leaving any thing behind him in the way of writing.

We have cause also to regret that the late Dr. Hudson, of Philadelphia, did not, during his life time, embody his professional principles for the benefit of his contemporaries, and those who shall succeed him in dental operations. I may say, without fear of contradiction, that he has left behind him no one in this country so able to instruct, and so well qualified, from observation and experience, to be useful to the student. I am well pleased to learn that he left a large collection of notes and memoranda on his practice, and critical remarks on the writings and practice of other dentists, all of which have fallen into the hands of Doctor Trenor, of this city, to whom the profession is already indebted for several very valuable papers on subjects connected with his profession. With so valuable help as the papers of Doctor Hudson, so able and zealous a compiler as Doctor Trenor may well encourage the profession to expect a work of great value to all who wish to become thoroughly acquainted with the theory and practice of dental surgery. I cannot forbear making an extract from an article published in one of the Philadelphia papers, from the pen of my highly esteemed friend, Doctor Fitch, author of the most comprehensive work on the teeth ever published in this country. The extract which follows, is a just tribute of respect to the memory of departed worth, and alike creditable to the feelings and liberality of the author; and I believe every dentist who had the slightest acquaintance with Dr. Hudson's practice, will cheerfully admit the propriety of Doctor Fitch's eulogium.

"Some abler pen—some nearer friend, may tell his merits as a parent, a husband, and a citizen. The writer of this will presume only to speak of him as a professional man. Those only who have carefully attended to the subject, can have any adequate idea of the benefit the labors of Doctor Hudson have conferred, not only upon the people of this city, but of every part of the United States.

"When he commenced his practice here, he found the profession, generally, at a very low ebb, usually exercised by mechanics. Those great principles which elevate dental surgery from an art to a science, were almost entirely overlooked or unknown. To remove this mass of rubbish—to obliterate bitter and widely extended prejudices, was the task of Doctor Hudson. How well he performed this duty can only be estimated by a reference to the state of the profession at the time he commenced his practice, and when he was taken from it by the hand of death.

"Previously to his time, nearly all the talent among the dentists of this country was directed to the making and insertion of artificial teeth. Doctor Hudson taught the *possibility* and the immense advantage of *preserving* the *living teeth*, instead of suffering their loss, and resorting to artificial ones. He taught that, by strictly attending to the dentition of children, all the irregularities and deformity of the teeth might be prevented; and that by continuing our attentions, and performing timely operations upon any of those which might become defective, these useful organs may be preserved in perfection during our whole lives.

"Founded upon these principles, and recommended by his admirable operations, the practice of Doctor Hudson soon became the praise and admiration of all who witnessed or experienced its beneficial effects. His name was soon placed as first amongst all those who practised dentistry in this country. This reputation he always retained.

"In another way his superior system of practice has conferred an amount of benefit which can never be fully appreciated. It is, that his excellent and highly finished operations have long been models of imitation to other dentists. For a great many years, to equal his operations has been the highest ambition of other practitioners; none expected to excel them.

"The gentlemanly deportment of Doctor Hudson to his patients and patrons, his urbanity, his mildness, pointed him out as a model to all surgeon dentists.

"Finally: he ever sustained the dignity and respectability of the profession, inspired confidence in its capabilities, and demonstrated its claims to a high standing among those professions which contribute to the well being and happiness of the human family."

I have lately been informed that Doctor Flagg, of Boston, a gentleman well known for his professional ability, is now preparing a work of considerable extent, designed for the student and profession at large. Mr. Arnold, also, of this city, a well educated dentist, is translating a popular French work.

(2) *The teeth, deciduous, totter and decay.*

The teeth are composed of two very distinct substances. The internal is called the osseous part, or rather ivory, and forms the greatest part of a tooth; the external, which envelopes the former like a thin incrustation, on all that part which is out of the sockets from the commencement of the roots, is the enamel.

"At the extremity of each root there is a very small hole, by which the blood vessels and a nervous filament penetrate, destined to give it life and nourishment. The nerve and the blood vessels continue their course in a narrow canal, with which the root is provided, and form, in the interior of the tooth, a pulpy mass, composed of a gelatinous substance, contained in a very thin mucous membrane, formed by the development of the nerve and its vessels. It is by means of this membrane, that the tooth forms and nourishes itself, and acquires its increase." (*Gerbeaux, on the Teeth, Edinburgh Edition,* 1817, pp. 34, 35, 36.)

(3) *Would shield defenceless infancy from harm.*

"The teeth furnish very considerable characteristics of scrofulous habits.' Either they are badly formed as to their common outline; their surfaces are corrugated and discolored; or, if they be well shapen individually, their enamel is very thin, and preternaturally white; and the spaces between the teeth are unusually wide. It is a wise precaution to observe the teeth of nurses; for I should always question the fitness of a wet nurse, with a bad set of teeth, however other circumstances may be in her favor." (*View of the Alimentary Organs, by Thomas Hare, London,* 1821, p. 228.)

(4) *And patient merit never want a friend.*

"It is to be hoped, that in time, patients will be able to discover that educated men are successful in a far greater number of instances than even the most fortunate of advertising empirics. But it is an old complaint, and, unhappily, though old, not an obsolete one, that ignorant pretension, especially when wrapped in mystery, is more attractive to the million, than modest ability. It is consoling however, to the respectable practitioner to know, that while empirical trickery may confer an evanescent fame, sound scientific acquirement is the only basis on which can be founded a reputation solid, progressive, and enduring." (*Snell on the Teeth,* 1832, p. 164.

(5) *And seeks from science her appointed part.*

"Infants have been born with one or more teeth; this was the case with the great monarch, Louis XIV., in whom the presence of a tooth at his birth, seemed the presage of his future greatness;— Polydore Virgil also mentions a child that was born with six teeth; but towards the end of the first year is the most usual time for the teeth to appear, and about the thirtieth month they are all cut, to the number of twenty: they are called milk teeth, either because they cut while milk is the only nourishment, or because they equal that fluid in whiteness. They are also called primitive or casting teeth: they are ten in number in each jaw; four of which are incisors, two canine, and four grinders. The incisors of the lower jaw appear first, then those of the upper jaw, afterward the canine, or, more frequently, the grinders.

"Every thing here appears to be for the advantage of the infant; an interval of a month or six weeks, between the cutting of each tooth, seems designed to calm the irritation which generally accompanies this evolution; for it is rare to cut these teeth, and particularly the canine, without a swelling in the gums, heat of the mouth, salivation, and redness of the cheeks. This is the way that dentition usually proceeds; sometimes it is so calm and easy, that the tenderest mother has no reason to fear, while at other times it is so laborious, and attended with so many accidents, as to put the life of the child in jeopardy; in this latter case, whatever be the cause, the effects are sufficiently obvious; they have been observed from the earliest times, and almost in every country, and accord with the observation of Hippocrates: 'Those,' says he, 'whose teeth are on the point of cutting, are affected with itching of the gums, fevers, convulsions, diarrhœas; especially in cutting the canine teeth, and in those children which are fat, and of a constipated habit of body.'— (*Aphor. sec.* III. 25.) To add to this picture, would be to augment that dread of dentition which sensible mothers feel but too acutely at present; without being able to foresee or to combat those causes, which often render it violent, and sometimes mortal. But to dissemble, and to say that dentition is never difficult and perilous, would be to consign too many mothers to a perfidious security, and one day they would have but too much reason to complain of this silence." (*Dentiste de la jeunesse, by Duval, Atkinson's translation,* pp. 29, 30, 31.)

(6) *And flooding tears, in sad succession rise.*

The first set of teeth begin to protrude generally about the sixth or eighth month; but in some cases the teeth have been known to make their appearance as early as the fourth or fifth month; and sometimes, on the contrary, not until the fourteenth or fifteenth. The period of teething does not depend on the health and strength of the child, as this process sometimes seems slowest with the strongest children.

The two incisors of the under jaw are the first which make their appearance; and are followed, in about three weeks or a month, by similar teeth in the upper jaw. The lateral incisors of the under jaw are the next which follow. Nature then interrupts this uniformity of progress, and instead of the canine teeth, which are the next in situation, the anterior molares of the under jaw make their appearance, and are succeeded in a short time by those of the upper. The canine teeth and larger molares then follow to complete the set, which is generally effected in about two years and a half. Deviations from this order are occasionally met with, and, in some instances, children have been known to be born with the two front incisors of the lower jaw; but as such premature growth cannot be perfect, and as such teeth occasion much pain and inconvenience to the child, it is always advisable to extract them. The first dentition is a critical period in the life of a child; and the mortality from this cause is clearly ascertained to comprise more than half of those that die under the age of two years. The efforts which the teeth make to unfold themselves, naturally produce a powerful tension and pressure on the gums; and this gives rise to irritation and pain. The gums become swelled and inflamed; the saliva is constantly discharged from the mouth, and the whole frame seems to labor under the influence of fever.

It is proper, therefore, that every parent should be aware of the consequences that may ensue, in order to resort to those means which experience has found to be most successful in affording relief. This can be obtained only by lessening the pressure of the tooth on the gum. To accomplish this, the child is generally allowed some hard substance to rub thereon; but this, although it may give temporary relief, tends in the end to increase the irritation. Gentle friction with the finger will be found to afford more relief, and may be rendered still more effectual by the use of a little fine salt, or any other substance which will cause a discharge, and therefore reduce the inflammatory action of the vessels. Scarification, however, seems to be the safest experiment that can be employed. This is performed by the point of a lancet, pressed down upon the tooth, until the gum and the investing membrane be fully divided. The pressure being by this means taken off, the child will experience instantaneous relief. Parents should be cautious how they give way to any vulgar prejudice against an operation by which many have been freed from the most dangerous symptoms.

The use of the coral has been recommended by persons totally ignorant of the disorders of dentition, in opposition to the opinions of those who have made the teeth their exclusive study. I am decidedly in favor of the theory of Doctor Blake, who says "The coral is a most dangerous weapon, put into the hands of children to destroy themselves; for as the teeth arise and become slightly elevated above the edge of the socket, those hard bodies press and bruise the gum between them and the sharp points or edge of the tooth underneath; inflammation and its consequences undoubtedly follow; and in this way, I am firmly persuaded, the lives of thousands of children have been lost."

Dentition is often accompanied by a fever of an inflammatory nature; the cheeks become flushed; the eyes heavy and the skin hot and parched; the rest is broken and the appetite lost; and if timely assistance be not obtained, convulsions sometimes suddenly supervene, and not unfrequently terminate fatally.

The mildest effort which marks the interposition of nature, is the appearance of numerous eruptions of the skin; the period of dentition marks their true nature, they are never removed nor cured until the cause ceases to exist.

(7) *And neither wound too little nor too much.*

"As far as my experience has taught me," says Dr. John Hunter, "to cut the gum down to the tooth, appears to be the only method of cure. It acts either by taking off the tension upon the gum, arising from the growth of the tooth, or by preventing the ulceration which must otherwise take place. It often happens that the gum will re-unite over the tooth; in which case the same symptoms will be produced, and they must be removed by the same method. I have performed the operation above ten times upon the same teeth, when the disease had recurred so often, and every time with the absolute removal of the symptoms. The gums may bleed a little, which may be of service in taking off the inflammation. I never saw a case where the bleeding either proved inconvenient or dangerous."—(*Hunter on the Human Teeth*, pp. 240, 243.)

(8) *Let unobstructed nature do the rest.*

"If we consult the tables of mortality in the towns and villages, the number of the victims of dentition, will certainly appear appalling; and they are always found to be more numerous in the former than in the latter. Happy villages! Your industrious inhabitants, with usages as ancient as their manners, raise their little ones in a manner more conformable to nature; they do not offer, in their cares, the spectacle of that refinement, which the mothers of the city, with more appearance of sensibility, have drawn from the theories of education, which do not acknowledge experience for their base." (*Atkinson's Duval*, p. 36.)

(9) *Descends lamented to an early tomb.*

Since in childhood the first sufferings begin, in childhood also the foundation of a good or bad constitution is laid. It is at this critical time that the greatest attention should be paid to the state of the gums, to mark the protrusion of the teeth, as well as the after changes; for it is only by knowing the steps and order of their progress, that proper aid can be given to the efforts of nature, during the years of childhood." *L. S. Parmly's Lectures*, pp. 34, 35.)

(10) *In one, deformity;—the other, pain.*

This deformity generally arises from inattention during the time of shedding teeth. The remedy consists in removing the causes, of which there are many. The first is when the growth of the jaw is insufficient for the new set, and thus forcing them to crowd and overlap each other, by which the central incisors of the upper jaw are pressed forward, and thus forming what has been termed, from its shape, "a rabbit mouth." In such cases, the extraction of one or more of the bicuspides from each side of the mouth is absolutely necessary, in order to bring the incisors into a regular arrangement, which, after this operation, is easily effected, by the occasional pressure of the thumb and finger, or by a judicious application of silken ligatures.

It is sometimes, however, necessary to apply gold plates, springs, and other mechanical contrivances, to bring them into a regular arrangement.

A second irregularity arises from supernumerary teeth. This takes place, most frequently, in the front teeth of the upper jaw, and thus gives it a most unseemly appearance. In this case it is likewise necessary to have recourse to extraction as soon as possible.

A third irregularity, and one of frequent occurrence, arises from one tooth projecting beyond another. This is easily remedied by removing the projecting part with a proper instrument.

A fourth irregularity consists in the teeth having formed themselves into ragged edges: and a fifth, in their having received fractures from blows or falls. The last two irregularities are principally confined to the front teeth, from their frequent action against each other, more especially when the back ones have been lost; and from being, by their situation, more exposed to accident. These irregularities are likewise remedied by removing portions from their cutting edges. This operation is not only one of the most useful, but it is often absolutely necessary; for diseases of the tongue and cheek are sometimes occasioned by projecting, or badly formed teeth: and it not unfrequently happens, that very useful teeth are extracted, to the future inconvenience of the patient, when the judicious removal of portions only would have answered every purpose; and that a partial loss of enamel from the cutting edges never produces decay, while the natural cavity in the tooth remains untouched, is evident from the well known practice of savage nations, who cut their teeth into various shapes without incurring any disease. When fractures are too extensive to be remedied by the above treatment, various circumstances, particularly the age of the person, must influence the mode of proceeding. If the fracture be of one tooth, and the person has not arrived at the age of maturity, the extraction of the fractured tooth, by giving the adjoining ones the opportunity of approaching each other, will render the defect but inconsiderable. When, however, such accidents occur at an advanced period of life, this kind of treatment can hardly be expected to be entirely successful; but as there is no other means of remedying the defect, unless it be the insertion of an artificial tooth, the earlier assistance is procured, the greater will be the chance of success. A tooth that has been knocked out without injury to its socket, will fasten again, if immediately returned and secured in its place.

Mr. Duval has the following judicious remark on this subject:—"It is from the age of six years to that of fourteen, being the usual period of the second dentition, that the teeth require the greatest care. When there is any disposition to irregularity, they ought to be inspected once or twice a year by the surgeon dentist, who can in almost all cases ensure a regular arrangement." (page 27.)

(11) *Avoid the danger, or repair the ill.*

The protrusion of the second set of teeth is, in general, attended with no pain or uneasiness. This set, when complete, consists of thirty-two teeth, being twelve more than the first set. But though the regular number of the second set of teeth is thirty-two, a deficiency of this number sometimes occurs, and this deficiency is generally confined to the dentes sapientiæ, or wisdom teeth. Sometimes the lateral incisors, and not unfrequently one or both of the upper canine teeth, are found wanting; the protrusion of the dentes sapientiæ, at times, does not take place till the fortieth year, and, in some instances, not even then.

There are cases recorded of persons never having any teeth; one case of this kind has come under my own observation, and in that instance the gums were sufficiently callous to answer every purpose of mastication. I have frequently been informed that there is a family living in South Carolina, several members of which have no teeth, where the processes and gums are so perfectly well formed and elongated, as to make the defect hardly perceptible.

The removal of the temporary teeth is a curious operation of nature. The fangs being absorbed, they loosen by degrees, and are pushed from their situations by the pressure of the second set. But there are instances in which this absorption does not take place, and, consequently, the second set not being permitted to come forward in their proper places, become irregular and deformed. The only means of preventing this irregularity and deformity, is timely extraction.

(12) *Should meet resistance from opposing force.*

There are instances, and those not a few, when relief can be afforded by no other means than by extraction; for this operation I prefer the improved forceps, in all cases where they can be safely applied, as being the best and safest instruments that can be used; but if the tooth is so much decayed as to render it likely to break where the points of the forceps embrace the tooth, I uniformly use a small key instrument, with the improvement I made on it many years ago, which is now in very general use, in England and in this country.

In order to do myself justice, I shall here make a short extract from Mr. Snell's work, lately published in London, the author of which, in speaking of the instrument, forgot to make mention by whom the improvement was made. " The moveable bolster," says he, " when in apposition to the gum, retains its relative situation, and the fulcrum of the instrument moves upon it; this I consider one of the most important improvements of the key instrument; its superiority over the old one is so evident, as to need no farther explanation."—(page 100.)

On the subject of this improvement, Dr. Thomas Hare, of London, as early as 1821, in his celebrated treatise on the " Stomach and Alimentary Organs of the human body," thus speaks: " The instruments hitherto in use for the extraction of teeth, have, to my apprehension, been deficient of that neatness and convenience for adaptation, which every operation on the human frame so justly demands. Besides his finished qualifications as a dentist, therefore, it gives me great pleasure to notice the merits of Mr. Eleazar Parmly, in contriving an instrument, admirable for its simplicity, which completely sets aside these obvious disadvantages." (Pages 295, 296. *London Edition*, 1821.)

I make the following extract from Mr. Koecker's work, to show that many persons have an unwarrantable antipathy to extraction; and that parents are frequently more in fault than their children, when resistance is made to the necessary performance of operations on the teeth. A want of decision on the part of parents, often subjects the child to serious injury, and the operator to many inconveniences, not the least of which is loss of time, which might be wholly avoided, if parents would send their children to the dentist with directions for his government, or submit them entirely to his management, when placed in his hands for the benefit of his advice or operations.

It is the case of a child about ten years of age. "I discovered," says this writer, "several of her teeth to be carious, and proposed to remove the caries with a file, and to extract the first four large grinders, in order to prevent a recurrence of the disease, which had arisen from some irregularity of the teeth, owing to their crowded state.

"The poor child was greatly alarmed at this advice. Her eyes filled with tears, although her sisters, who were more familiar with the operation, where whispering her to be of good cheer. The affectionate mother was much grieved at the discovery, and the struggle between her good sense on the one hand, and her parental anxiety on the other, was so affecting, that I proposed another plan, by which I should be able to save all the teeth of her daughter. But to this proposal she would not consent, declaring that she was convinced my first advice was the best, and adding that she and her daughter would submit to the operation first proposed; desiring only a little time for preparation.

"About a week afterwards the little girl called upon me in excellent spirits; and after expressing her sorrow for not having submitmitted to the operation immediately, stated that her reluctance had principally resulted from the alarm of her mother, who had continued, ever since I last saw her, to express her wish that the operation should be performed, but had not courage enough to agree to its performance. She, the daughter, therefore, had at last resolved to come to me, without the knowledge of her mother; and having acquainted me with the circumstances, she sat down with sparkling eyes and a smiling countenance, and said, 'Now, if you please, sir, I am ready!'

"I shall not attempt to describe my feelings on this occasion; but merely state, that, in less than five minutes, the four permanent first large grinders, the largest teeth in her mouth, were wrapped up in a piece of paper, and she went away with them in her hand, rather dancing than walking, to surprise and relieve her anxious mother from fear and apprehension.

"I leave to parents, and particularly to mothers, to judge of the mother's feelings for so amiable a daughter."

"It is remarkable," says Mr. Fox, "but not less true, that there is scarcely any pain to which the human body is subject, that is so much under the influence of fear and hope, as the tooth-ache. This is experienced by almost every patient, and as constantly observed by every surgeon, by the pain generally leaving that individual who is under the immediate expectation of having the tooth extracted.

"Empirics are not wanting, who take advantage of this circumstance, and pretend to cure tooth-ache by certain charms and nostrums: indeed, at the moment, they appear to be successful, from the passions of fear or hope causing a temporary suspension of pain.

" The burning of the *Antihelix* of the ear, in order to relieve this complaint, must be ranked amongst the above methods of cure; it is one not worthy of notice, had it not been formerly a very popular remedy, and lately recommended in a periodical publication.

" The slightest knowledge of the distribution of the nerves to the teeth must convince every one, that a division of any part of the ear cannot separate the connexion that subsists between the teeth and the principal branches that go to the brain; and, therefore, no more benefit can be derived from this formidable operation, than may be attributed to the influence of fear." (*Fox on Human Teeth, Part* II., p. 38.)

(13) *For healthy action on the general frame.*

If we may judge from the opinions of the most able physicians and surgeons, it is evident that the digestion of our food depends greatly on the quantity of saliva which is elicited from the glands and mingled with it, and to its being properly masticated by the teeth, before it descends into the stomach. From this view we are led to consider the teeth as essential instruments in preparing our food. The front teeth are intended to take hold of and divide the food, and those placed back in the jaws to grind or comminute it, in which state only it is fit to pass into the stomach.

Digestion, then, is performed first by the action of the teeth, during which process the saliva is elicited from the glands in order to be mixed with it, and, as it is comminuted, descends into the stomach along with this powerful solvent, for its assimilation. It is there mixed with the gastric juice, and receives the other changes which convert it into nutritive matter.

If the teeth, then, are incapable of performing their office, the process of digestion must be imperfectly carried on, and the health of the individual suffer in proportion. The supply of nourishment to the system is the first and great function of life; and the health of the teeth, so essential to it, cannot claim too much attention from every individual.

(14) *Disgusting objects of deformity!*

" The influence which the teeth exercise over beauty, justifies the pre-eminence which I attribute to them over all the other attractions of the countenance. This ornament is equally attractive in both sexes: it distinguishes the elegant from the slovenly gentleman, and diffuses amiability over the countenance, by softening the features. But it is more especially to woman that fine teeth are necessary, since it is her destiny first to gratify the eyes before she touches the soul, and captivates and enslaves the heart." (*Dict. Sci. Med. Paris.*)

(15) *And spreads delight through all its wide domain.*

"Some idea of the rapid motion of the blood may be formed from the following calculation: the heart propels, at each pulsation, about one ounce of blood, and when it makes eighty pulsations in a minute, of course three hundred pounds of blood must pass through it in an hour, which is about twelve times the whole mass of blood in the body; and this rapid action is incessantly going on, night and day, through life." (*Fuller on the Teeth*, p. 47.)

(16) *And hence, defective, only from abuse.*

"The following is the composition of the teeth, as given by Berzelius, whose analysis appears to have been more elaborate than that of any other chemist. It will be found to record the occurrence of several substances as existing in the bone and enamel of the teeth, the presence of which has not been detected by others. According to this celebrated chemist, the enamel of the adult teeth contains, in one hundred parts:—

"Phosphate of lime	85.3
Fluate of lime	3.2
Carbonate of lime	8
Phosphate of magnesia	1.5
Soda and muriate of soda . . .	1
Animal matter and water . . .	1
	100

"The bony substance is stated, by the same authority, to contain:—

"Phosphate of lime	62
Fluate of lime	2
Carbonate of lime	5.5
Phosphate of magnesia	1
Soda and muriate of soda . . .	1.5
Gelatine and water.	28
	100"

(*Bell on the Teeth*, pp. 6, 7.)

(17) *Assigned these organs in the frame of man.*

"The teeth, which are the only hardened parts of the animal frame exposed to the influence of air, to the influence of invasive fluids, or called upon to exercise any sort of mechanical power without the intervention of membranous or other protection, and without the aid of lubricating fluid proper to themselves, or being placed beyond the mutilating influence of chemical agents, are of a more dense, refined, and minute crystalline texture externally, than any other of its objects; but this natural advantage of texture has become progressively lessened with the advancement of civilization." (*Hare on the Stomach*, p. 51.)

To the foregoing remarks of my distinguished friend, I will add, that the teeth are the hardest and most compact parts of the human frame, as is evident from their being found after interment in a perfect condition, after all the other bones have mouldered away.—Hence we may reasonably conclude, that, from their formation, they are little liable to decay; and that the inattention of the individual, and the action of extraneous matter upon them, are the chief causes of those diseases with which they are oftentimes affected.

Though to a superficial observer the teeth may appear to be a part of the body which is little deserving of regard, yet, those who consider the many functions which the teeth have to perform, must allow that their claims on our attention are as many and as strong as those of any other part of the human frame. Those means should be studied, therefore, which tend to preserve them in their original perfection; and every argument used, to impress upon the attention of society at large the importance of resorting to those means, whenever circumstances may require their aid.

(18) *A greedy vampyre, feasting on his heart!*

" The Brazilians, when first discovered by the Europeans, lived the most natural, original lives of mankind, so frequently described in ancient countries, before laws, or property, or arts made entrance among them; they lived without labor, farther than for their necessary food, by gathering fruits, herbs, and plants; they knew no drink but water; were not tempted to eat or drink beyond common thirst or appetite; were not troubled with either public or domestic cares, nor knew any pleasure but the most simple and natural." (*Sir John Sinclair's Code of Health*, Vol. IV. p. 333.)

" The chief food of the Japanese is rice, pulse, fruits, roots, and herbs; but mostly rice, which they have in great plenty and perfection, and dress in so many different ways, and give to it such variety of tastes, flavor, and color, that a stranger would hardly know what he was eating." (*Mod. Universal History*, Vol. IX. p. 62.)

" The philosophers of India eat nothing but rice, fruits, and herbs." (*Bartolomeo's Voyages, by Johnson*, p. 287.)

" The four most ancient orders of priests, the Rahans, the Bramins, the Magi, and the Druids, confined themselves to vegetable food, as did also the Athenian prince, Triptolemus, who established the Eleusinian mysteries, and prohibited by law all injury to animals."—(*Monthly Magazine, February*, 1812, p. 21.)

If it should be deemed necessary to explain my motives for any seeming digression from my subject, in introducing matter that will no doubt be considered by some as wholly unconnected with the duties of a practical dentist, I would say, that it is my settled opinion, that whatever affects the general condition of the system, must, in a greater or less degree, affect the health of the teeth.

I have myself suffered much, in former years, from debility and other forms of indisposition, induced, I am persuaded, by gross and improper diet. For the last year I have abstained from all exciting drinks, have utterly relinquished the use of tea and coffee, have abstained from animal food of every name and nature, and by this course of conduct have found my health to be so much benefitted, that I feel it a duty as well as a pleasure, to endeavor to impress upon the reader the necessity of living more frugally, if he wish to enjoy that health of body and that tranquillity of mind which none can enjoy, for any great length of time, but such as live in accordance with the rules prescribed by all profound philosophers, both of ancient and modern times

On this subject, and for the foregoing reasons, I have selected such passages from various distinguished authors as I have found true by experience, in the hope that this cloud of witnesses in behalf of temperance, health, and happiness, may influence some of my readers to sacrifice at least one debasing appetite on the altar of truth and reason.

(19) *Compared, intemperate luxury! with thine.*

"The throat has destroyed more than the sword."

MARTIAL.

"The nations that subsist on vegetable diet are of all men the handsomest, the most robust, the least exposed to diseases and violent passions; and they attain the greatest longevity. The Bramins of India, who frequently survive a century, eat nothing but vegetables. From the Pythagorean school, Epaminondas issued forth, so renowned for his virtues; Archytas, so celebrated for his skill in mechanics; and Milo of Crotona, for his strength. As vegetable diet has a necessary connexion with many virtues, and excludes none, it must be of importance to accustom young people to it, seeing its influence so powerfully contributes to beauty of person and tranquillity of soul. The children of the Persians, in the time of Cyrus, and by his orders, were fed with bread, water, and cresses; and Lycurgus introduced a considerable part of the physicial and moral regimen of these children into the education of those of *Lacedæmon*. Such diet prolongs infancy, and, of course, the duration of human life." (*Bernardin de St. Pierre's Studies of Nature*, Vol. IV. p 357.)

"As, in every period of history, it has been known, that fruit and vegetables alone are sufficient for the support of life, and that the bulk of mankind live upon them at this hour; the adherence to the use of animal food is no more than a persistance in the gross customs of savage life—and evinces an insensibility to the progress of reason, and to the operation of intellectual improvements." (*Dr. Lambe on Regimen*, p. 243.)

"The circumstance of weighing down the stomach with a load of food, particularly where relaxation of the general fibre is favored by inactive habits, must tend by degrees to increase its capaciousness; and in proportion as this increases, the energies of the brain and of all the organs of sense become diminished; the sight, the hearing, and the smell, are less exquisitely acute; the palate is not satisfied with simple viands; and even the sense of touch is rendered less nice.

"It was well observed by the late Dr. Saunders, that we are made gluttons from the cradle by the officiousness of our nurses; a child's health is disordered by being over fed; it cries and complains from the effects, and with a view to silence it, more and more food is given, so that the evil is increased instead of remedied, and the capacity of the stomach gradually extended far beyond the salutary bounds of nature." (*Hare on the Stomach*, p. 134.)

(20) *And drains destruction from the circling glass.*

"A vulgar error prevails, which is, that strong liquors are essential to bodily strength. This false opinion is partly grounded on the idea of a nutritious property in those liquors, and partly, perhaps, in a logical error in using the word *strong*, as being necessarily connected with strengthening the animal body. The first notion is entirely wrong; since it is proved, by continual evidence that strong liquors are inimical to animal life throughout the creation, and that no living animal or plant can be supported by such fluids; but that, on the contrary, they all become sickly and perish under their influence. I presume that no person would give a lamb, a calf, a chicken, or a duck, such liquors, with a hope of rendering them sooner fat, and of sweeter flesh, even if such liquors were so cheap as to render it an economical process. Yet many parents do this to their infant children! The fate of those individuals is truly deplorable, who cannot exist without an exhausting stimulus." (*Sir Anthony Carlisle's Lectures on fermented liquors.*)

Dr. Rush observes, that, "since the introduction of spirituous liquors into such general use, physicians have remarked that a number of new diseases have appeared among us, and have described many new symptoms as common to old diseases. Spirits, in their first operation, are stimulating upon the system. They quicken the circulation of the blood, and produce some heat in the body. Soon after they become what is called sedative; that is, they diminish the action of the vital powers, and thereby produce languor and weakness."

(21) *Crowns high the board; for this the herd has bled.*

"Dr. Alphonsus Lercy, of Paris, has published an essay on certain diseases of men, which he traces to the animals on which they had fed; and he establishes the doctrine generally, that many diseases with which mankind are afflicted, are communicated by eating the flesh of animals." (*Monthly Magazine, June* 1815, p. 446.)

"The late Sir Edward Barry prevailed with a man to live on partridges, without vegetables; but after eight days' trial he was obliged to desist, in consequence of strong symptoms then appearing of an incipient putrefaction." (*Sir J. Sinclair's Code of Health*, Vol. I. p. 425.)

"The use of swine's flesh, in union with ardent spirits, is, in all likelihood, the grand cause of the scurvy, which is so common in the British nation, and which would probably assume the form and virulence of a leprosy, were our climate as hot as that of Judea." (*Dr. Adam Clarke.*)

"It is a remarkable fact, that at Heimaey, the only one of the Westmann islands which is inhabited, scarcely a single instance has been known, during the last twenty years, of a child surviving the period of infancy. In consequence, the population, which does not exceed two hundred souls, is entirely kept up by emigration from the main land of Iceland. The food of this people consists principally of sea-birds, fulmars, and puffins. The fulmars they procure in vast abundance; and they use the eggs and flesh of the birds, and salt the latter for their winter food. There are a few cows and sheep on the island, but the inhabitants are said to have no vegetable food."—(*Dr. Lambe's Reports on Regimen*, p. 197.)

"In ancient times, the medicines of the Indians consisted chiefly, according to Strabo, in regularity, temperance, and a choice of food." (*Bartolomeo, by Johnson*, p. 423.)

"The man who forsakes not the law, and eats not flesh meat, like a blood thirsty demon, shall attain good will in this world, and shall not be afflicted with maladies." (*Laws of Menu, from Sir William Jones*, Vol. III. p. 206.)

"Happy the man, who, studying nature's laws,
Through known effects can trace the secret cause:—
He feeds on fruits, which of their own accord,
The willing ground and laden trees afford:—
Simple his beverage, homely is his food,
The wholesome herbage, and the running flood."

(*Dryden's Virgil, Georg.* II. l. 698.—III. l. 790.)

"The moral effect of aliment is clearly evinced in the different tempers of the carnivorous and the frugivorous animals. The former, whose destructive passions, like those of ignorant man, lay waste all within their reach, are constantly tormented with hunger, which returns and rages in proportion to their devastation; this creates that state of warfare or disquietude which seeks, as in murderers, the night and the veil of the forest; for should they appear on the plain, their prey escapes, or, seen by each other, their warfare begins.—The frugivorous animals wander tranquilly on the plains, and testify their joyful existence by frisking and basking in the genial rays of the sun, or browsing with pleasure on the green herb. The same effect of aliment is discernible amongst the different species of men; the peaceful temper of the frugivorous Asiatic is strongly contrasted with the ferocious disposition of the carnivorous European." (*Jean Jacques Rousseau.*)

"The man who sheds the blood of an ox or sheep, will be habituated more easily than another to witness the effusion of that of his fellow men; inhumanity takes possession of his soul; and the professions whose object is to sacrifice animals for the purpose of supplying the supposed necessities of men, impart to those who exercise them, a ferocity which their relative connexions with society but imperfectly serve to mitigate." (*Encyclopedie Methodique.* Tome VII. Part. 1. liv. 65.)

"India, in fact, of all the regions of the earth, is the only public theatre of justice and tenderness to brutes, and all living creatures; for there, not confining murder to the killing of man, they religiously abstain from taking the life of the meanest animal." (*Ovington's Voyage to Surat*, p. 296.)

"The Gentoos rear numerous herds of cattle; but such is their veneration for these animals, on account of their useful and patient services to man, that to kill, or even maim one of them, is deemed a capital offence." (*M. de Page's Travels*, Vol. II. p. 27.)

"Among the Wallachians, though there is no positive institution to the contrary, yet the women never destroy the life of any creature. Whether this custom were founded by some of their ancient legislators, or whether it originated from accidental circumstances, is uncertain; but however that be, nothing can be more suitable to the gentleness and timidity which form the most beautiful and engaging part of the female character." (*Dr. Alexander's History of Women*, Vol. I. p. 366.)

"The Indian Bramins neither kill nor eat any sort of animal; and it is certain they have not done it for more than two thousand years." (*Dr. Clarke's Fleury*, p. 87.)

"As a proof of the havoc committed by more savage man on the creatures of his prey, it is said, that in Paris there are four thousand sellers of oysters, and that fifteen hundred large oxen, and above sixteen thousand sheep, calves, or hogs, besides a prodigious quantity of poultry and wild fowls, are eaten daily." (*Bayle's Dictionary.—Art. Ovid.*)

"When children are barbarous towards innocent animals, they will soon become the same towards men. Caligula, before imbruing his hands in human blood, had made a practice of destroying flies. It may be said, that the moral behavior of man to man commences, in some measure, with that of an infant towards insects. Never, therefore, let a child acquire a truth by means of a vice; nor extend its understanding at the expense of its heart. Let it not study the laws of nature in the pangs of sentient beings; but rather in the succession of their enjoyments." (*St. Pierre's Harmonies of Nature*, Vol. I. p. 411.)

The celebrated Mr. John Tweddell, in one of his letters, thus beautifully expresses himself:—"I no longer eat flesh meat, nor drink fermented liquors. As for the latter, it is merely because I do not believe that they can ever be good for the constitution, and still more especially with a vegetable diet. With regard to the flesh of animals, I have many times thought on the subject. I am persuaded we have no other right than the right of the strongest, to sacrifice to our monstrous appetites the bodies of living things, of whose qualities and relations we are ignorant. Different objections which struck me, as to the probability of good from the universality of this practice, have hitherto held me in indecision.

"I doubted whether, if this abstinence were universal, the animals which we now devour might not devour, in their turn, the fruits and vegetables reserved for our sustenance. I do not know whether this would be so; but I do not believe it: it seems to me that their numbers would not augment in the proportion which is apprehended. If, on the one hand, we now consume them with our teeth, on the other, we might then abandon our schemes and inventions for augmenting the means of propagation. Let nature follow her own course with regard to all that lives. I am told that they would destroy each other:—In the first place, the two objections cannot exist together: if they would destroy each other, their numbers would not be excessive. And what is this mutual destruction to me? Who has constituted me dictator of the realms of nature? Why am I umpire between the mistress and her servants? Because two chickens fight till one dies, am I obliged to worry one of them to prevent the engagement? Exquisite and well imagined humanity!

"On the other hand, let precautions be adopted against famine, when experience shall have shown the necessity of them; in the mean while, we are not called upon to bury in our bowels the carcasses of animals, which, a few hours before, lowed or bleated; to flay and to dismember a defenceless creature; to pamper the unsuspecting beast that grazes before us, with the single view of sucking its blood and grinding its bones; and to become the unnatural murderers of beings, of whose powers and faculties, of whose modes of communication and mutual intercourse, of whose degree of sensibility and extent of pain and pleasure, we are necessarily and fundamentally ignorant." (*Life and Remains of J. Tweddell*, p. 215.)

(22) *Suspend forever all their songs of love!*

"Abstinence," says Shelley, "from animal food, subtilizes and clears the intellectual faculties." For all the sensualities of the table he had an ineffable contempt, and, like Newton, used sometimes to ask if he had dined. (*Vide Life of Shelley.*)

"So many dishes, so many disorders."
SENECA.

——— "Well observe
The rule of *not too much*, by temperance taught,
In what thou eat'st and drink'st; seeking from thence
Due nourishment, not gluttonous delight."
MILTON.

"By salt, Cayenne pepper, and other high seasonings, they stimulate the appetite, turn round the wheels of life too rapidly, and wear out the body, or machine, before its time; whereas, those who abstain from such wine, spirituous liquors, and hot spicy aliments, acquire an exquisite degree of delicacy in the sense of tasting; their spirits are more equal, their feelings more pleasurable, and, generally, they are much longer lived." (*Dr. Abernethy.*)

"Temperance and exercise are the parents of health."
MASON.

The common ingredients of health and long life are:—

"Great temperance—open air,
Easy labor, and little care."
ANON.

"It appears that the structure and uses of the teeth are more perfectly equalized in the human subject, than in any other animal. It is true that, in some tribes of animals, whose habits require the greatest possible extension of the office of a particular class of the teeth, a corresponding development of that class is found to take place, to a much greater degree than in man.

"Thus, in the *carnivora*, the cuspidati are greatly elongated and strengthened, in order to enable them to seize their food and to tear it in pieces; in the *rodentia*, or gnawing animals, as in the beaver, for instance, the incisors are remarkably long, and exhibit that extraordinary development which their peculiar habits demand, and in the graminivorous animals, the *ruminantia* especially, the molares are found to occupy the most conspicuous situation. But, in each of these instances, the other kinds of teeth are found to be proportionably of less importance, and in some cases, are actually wanting. In man, on the contrary, every class appears to be equally developed, to a moderate, though a sufficient degree, and to exhibit a perfection of structure which may be considered as being the true type, from which all other forms are mere deviations. It becomes, therefore, a question of some interest, and perhaps of no less difficulty, to what food the structure which has just been demonstrated is particularly adapted. The opinion which I venture to give has not been hastily formed, nor without what appeared to me sufficient grounds; I advance it, however, with diffidence, and do not profess to consider it much more than hypothetical.

"The endowment of reason, that greatest, best gift of the Creator, appears, if we consider the perfection of human organization, to be particularly, and, in its highest degree, even exclusively, adapted to the conformation and requirements of man. This high and divine endowment should never be lost sight of in our reasonings on the human structure, and the physiology and habits of our species, as it is only with the allowances and modifications which the possession of a quality so infinitely higher than the instinct of other animals necessarily supposes, that the actual habits of man can be viewed as compatible with his organization. Although these habits, now essentially arising from, and combined with a state of civilization, which, in a greater or less degree, must be allowed to exist in every known tribe of our species, cannot be considered, in any one instance, as actual and exclusively *natural;* yet we may be led, by a careful examination of the structure of the different organs, and by an analogical comparison of them, as they exist in man, with the same organs in those animals which most nearly resemble him in structure, but which are still found in a perfectly natural state, to a plausible supposition, at least, of what were originally his natural habits; and which would have still continued so, but for those changes which have arisen from the possession of this very endowment.

"With this view of the subject, it is not, I think, going too far to say, that every fact connected with the human organization goes to prove, that man was originally formed a frugivorous animal, and therefore probably tropical, or nearly so, with regard to his geographical situation. This opinion is principally derived from the formation of his teeth and digestive organs, as well as from the character of his skin, and the general structure of his limbs. It is not my intention now to go farther into the discussion of this subject than to observe, that if analogy be allowed to have any weight in the argument, it is wholly on that side of the question which I have just taken.—Those animals whose teeth and digestive apparatus most nearly resemble our own, namely, the apes and monkeys, are undoubtedly frugivorous; but as, from their organization, they are necessarily tropical animals, and without the gift of reason, by which they might have overcome the difference of temperature by artificial means, they remain still restricted to their original food, and confined to the very limited climate to which their structure peculiarly adapted them. The reasoning powers of man, on the contrary, have dinner time. The fat, lazy abbot, welcomed him very kindly, for hearing that the king was in that country, he concluded this was one of his guards. At dinner they had great varieties, and the king fed like a farmer on a piece of roast beef. But the abbot, who daily crammed himself with delicacies, could scarce relish a bit of any thing before him; and pleasantly said to the king:—'Honest friend, I would give five hundred pounds if I could pick so heartily as you do on a piece of roast beef.' The king returned him some small compliment, and after dinner took his leave. About a fortnight after, the king sent a messenger for the old fulsome abbot, and ordered him to be carried to the tower, there to be close prisoner, and allowed a given quantity of small beer and bread every day, but no other food. The abbot could not imagine what he had done to occasion such an imprisonment; and being thus dieted, he soon came to have a good stomach. After about a month, the king ordered the keeper to carry him in a good piece of hot roast beef, on which the abbot fell with such violence as if he would have eaten it at a mouthful. The king, who was stationed in a room where he could see how he laid about, at last stepped in and demanded his five hundred pounds. 'For,' said he, 'you said you would give it; and I have performed the cure, and got you a better stomach than all the doctors in England would have done:'—and so upon payment of the five hundred pounds, discharged him."

"No flocks that range the valley free,
  To slaughter I condemn,
Taught by the Power that pities me,
  I learn to pity them.

"But from the mountain's grassy side,
  A guiltless feast I bring;
A scrip with herbs and fruits supplied,
  And water from the spring."

Goldsmith's Hermit.

"To mix the food by vicious rules of art,
To kill the stomach, and to sink the heart,
To make mankind in social virtue sour,
Cram o'er each dish, and be what they devour;
For this the kitchen muse first framed her book,
Commanding sweat to stream form every cook:
Children no more their antic gambols tried,
And friends to physic wondered why they died."

Barlow's Hasty Pudding, CANTO II.

"In China, a single acre of land sown with rice, produces sufficient for the consumption of five persons for a year, allowing two pounds and a half a day to each." (*Breton s China*, Vol. IX. p. 29.)

"The peculiar property of the corn plant, is that of being produced, in some shape or other, in every part of the world, from the rice of the Ganges to the barley of Finland. It is, however remarkable, that it no where grows spontaneously, like other plants, so that providence appears to have devolved altogether on our species the charge of maintaining and extending its cultivation. Bread is, of all vegetable nourishment, the most substantial and durable." (*St. Pierre's Studies of Nature*, Vol. I. p. 22.)

"The living herbs spring up prefusely wild,
O'er all the deep green earth, beyond the power
Of botanist to number up their tribes:
But who their virtues can declare? who pierce
With vision pure, into the secret stores
Of health, and life, and joy! The food of man,
While yet he lived in innocence, and told
A length of golden years unfleshed in blood,
A stranger to the savage arts of life,
Death, rapine, carnage, surfeit, and disease,
The lord, and not the tyrant of the world."

THOMSON.

"Milk is in part vegetable food; and as such is used by all pastoral nations, and serves in a measure as a substitute for it." (*Dr. Lambe's Reports on Regimen*, p. 167.)

"To prevent indigestion, milk ought not to be eat together with flesh." (*Dr. Willet.*)

"Eggs contain a larger proportion of pure nourishment than any other food. They are a most valuable article, not only when consumed by themselves, but when mixed with other things. Raw, poached, soft boiled, or in any ways lightly cooked, they are gently laxative, and sit easy on most stomachs." (*Sir John Sinclair's Code of Health*, Vol. I. p. 414.)

"An entire diet of vegetable matter gives to the disposition a gentleness, softness, and mildness of feeling, directly the reverse of that ferocity of mind and fierceness of character which form the leading feature of all carnivorous animals, it has also a particular influence on the powers of the mind, producing liveliness of imagination and acuteness of judgment in an eminent degree. (*Sir John Sinclair's Code of Health*, Vol. I. p. 423.)

(25) *Nor meet one star that gilds the glowing pole!*)

"Mœnenius Agrippa dispelled the prejudice of the Roman people, by a fabulous allusion to the absurdity and blindness of all the members of the human body joining in rebellion against the stomach:— and if fable or fact could be adduced with such successful persuasion to dispel the blindness of modern luxury, the stomach would not so perpetually be excited as it is, to the contrary office of waging war against all the members of the body." (*Thomas Hare on the Stomach*, &c., *London*, 1821, p. 300.)

"The man who perceives in his own soul the supreme soul present in all creatures, acquires kindness towards all, and shall be absorbed at last in the highest essence, even in that of the Almighty himself." (*Laws of Menu.*)

(26) *Where health and purity should ever reign.*

Tartar is an accumulation of acrimonious earthy matter, round the necks of the teeth. This accretion arises from the fluid secretions of the mouth, and consequently, few persons are entirely free from it, though some, from the state of their general health, may be more subject to it than others. The teeth to which it is generally attached, are those that are the least acted upon in the process of mastication; and the molares of the upper, as well as the incisors of the under jaw, being situated nearer to the salivary ducts, more readily become affected. Whenever tartar is permitted to accumulate around the teeth, the gums, the membrane lining the alveoli, and even the aveolar process itself, are liable to suffer through the powers of absorption being increased by inflammatory action. It thus not unfrequently happens, that persons through want of proper care and attention to the removal of tartar, have lost the whole of their teeth.

"The formation of a calculous deposit upon the teeth, in a greater or less degree, may almost be said to be universal; for, although in many persons of sound health and temperate habits, it is possible, by care, to remove it so immediately after its deposition, that the teeth are kept generally free from it, still, I believe it is in all cases produced, and would accumulate, but for constant attention to the proper means for its removal. It consists of calcareous substance, which, when first deposited, is soft, friable, and readily crumbling under the finger; but gradually, and, as it were, by a slow kind of crystallization, acquires almost a rocky hardness. Its usual color is a dull, whitish yellow, or buff; though in some cases it is dark brown, or black, and in others has a greenish hue. It also varies in the character of its surface, being generally smooth, especially in those parts where the tongue acts constantly upon it; but occasionally, in other parts, exceedingly rough and rugged. It is susceptible of being stained by any coloring matter frequently taken into the mouth during its deposition; as, for instance, from smoking tobacco, or from the long continued use of colored gargles, especially such as are composed of articles which are not capable of perfect solution in aqueous menstrua.

"With the exception of gangrene, there is no kind of injury to which the teeth are exposed, so commonly and so extensively destructive as this concretion." (*Bell on Human Teeth*, p. 192.)

(27) *As death disparts the body from the soul.*

"It will be objected, perhaps, to what we have said, that many people who have beautiful teeth, and a healthy mouth, pay no attention to these parts; whilst those who attach a great value to them, and take the greatest care of them, have much trouble in preserving them. But it will also be an easy matter to reply to these objections, by making a comparison between children born of parents of sound constitution, and reared in the country, and those born in cities, whom an ill conducted education has predisposed to a debility of organization often to be recognised by the state of their teeth alone.—It ought, therefore, perhaps to be remarked, that diseased teeth with many individuals, originate in an organic disposition, which may be transmitted from fathers to their children." (*Gerbaux on the Teeth, Edinburgh Edition*, p. 23.)

(28) *The brush, the dentrifice, and, from the spring.*

"It is a religious precept," says Tournefort in his voyage to the Levant, "among the Mussulmen, to make the little ablution with the face turned toward Mecca; to rinse the mouth thrice, and clean their teeth with a brush." This shows how highly this custom is esteemed among a people, who formerly were forbidden, according to Menavius, to have a tooth extracted without permission from the emperor. Let children be taught by their parents the proper degree of care necessary for their teeth; they generally imitate them even in their sports:—here the agreeable lesson will be converted into a useful habit. (*Duval*, p. 75.)

(29) *And blooming health will soon reward it all.*

"As soon as the first teeth of a child are completed, they should be brushed twice, or, at least, once a day, with a soft brush and water. When children are thus early familiarized to the healthy and necessary custom of brushing the teeth, it becomes a fixed habit, and they find it ever afterward absolutely essential to their comfort. In winter, or in cold weather, the water used in brushing the teeth should be tepid. It is quite unnecessary to use any kind of powder to the first teeth of children." (*Murphy on the Teeth, London*, 1811, p. 118.)

(30) *Restore her hopes, and make her lovely still.*

Tartar is more safely removed by instruments than by such chemical solvents as have been too commonly employed; for, although the injury they occasion is not at first perceptible, they ultimately disorder the substance and texture of the teeth. This is not the case when the operation is properly performed by means of instruments; and is attended with neither pain to the person, nor danger to the enamel.

The manual operation of cleaning the teeth with instruments, is not performed with equal skill and delicacy by all who practise it.—There are, of course, as many different degrees of merit in dentists, as there are in the practitioners of any other art or science.

(31) *The offspring of an epicurean age.*

> "But just disease to luxury succeeds,
> And every death its own avenger breeds;
> The fury passions first from blood began,
> And turned on man a fiercer savage—man."
>
> *Pope's Essay on Man,* Epistle III.

(32) *And bears them all successively away.*

Caries is the most frequent disease of the teeth. The general seat of it is, on the sides of the front teeth and in the centre and sides of the back ones. Its progress through all its different stages is easily marked. First of all, a small dark spot appears on the enamel, through which the disease quickly passes into the internal structure of the bone. When this has taken place, the least pressure from chewing any hard substance is liable to break away portions of the enamel, and thus the internal part becomes subject to every injury which can arise from extraneous matter lodging therein. The molares are more subject to this disease than the front teeth; first, because their indented surfaces more readily retain any extraneous matter; and secondly, because they are less in view, and consequently less attended to.

In the enamel of the most apparently perfect teeth, small cracks may, with a magnifying power, easily be discovered. These, although unnoticed by the individual, are sufficient to admit disordered fluids, and to account for many forms of decay. This may likewise account for decay taking place in the broad surfaces of the molares, where the points of contraction always produce a depression, and thus afford a convenient lodgment for acrid saliva and other decomposing agents.

From my own observations I am induced to believe, that caries is universally caused by the action of external agents; and therefore cleanliness, and a due regard to the general health, after the proper offices of the dentist are performed, is the only guard against it. But some teeth, from their being of less dense structure, are less capable of resisting the action of decomposing matter, and consequently will require greater attention to ward off disease.

Mr. Brewster, of Charleston, whose experience, from having been fifteen years in extensive practice, has given him ample opportunities of judging, has, in a manuscript with which he politely furnished me, enumerated the following as the principal causes of decay. Constitutional softness of the teeth; The use of medicines during dentition or in after life; the too free use of acids, which, uniting with the lime in the enamel, destroys its strength; A too slow growth of the teeth between the time of protruding their points through the gum, and the full development of their crowns. It will often happen that the projecting points of the grinding teeth pass through the gum, and there for a long time remain with a portion of the surface, comprehending the indentations of the grinding surface, partially covered with the gum. As there is no union between the enamel and the gum, fine and soft particles of food insinuate themselves between the gum and the tooth. This matter decays, and the acid generated thereby acts perniciously on the enamel, and lays the foundation for subsequent decay of the tooth. The remedy is simple, and, in most cases, effectual. It consists in removing the gum from the top of the tooth, which is performed by a skilful operation, with little or no pain to the patient. This prolific source of decay I am not aware has ever been noticed by any writer on the teeth. Another prolific source of decay is the permitting a new tooth to come in contact with the decaying part of an old one. The remedy consists in removing a portion or the whole of the old tooth.

The too free use of mercury; The accumulation of tartar; Neglect of cleanliness by suffering the particles of food to remain between the teeth after meals; Irregular living, or any other cause which occasions a disordered stomach; Extremes of heat and cold; All Acids, whether in fruits, powders, or lotions; Metalic toothpicks; Injudicious dental operations; Most of the nostrums administered for tooth ache.

"I propose," says Mr. Bell, "to substitute for the word caries, the term gangrene of the teeth, which expresses the real nature of the disease. It may be defined—mortification of any part of a tooth, producing gradual decomposition of its substance. It usually attacks the crown of the tooth; sometimes, though rarely, the neck; but I believe it scarcely ever makes its first appearance on the root. It invariably shows itself on the external surface of the bone, immediately underneath the enamel, and its existence is, in many cases, first indicated by an opaque spot on that substance, occasioned by partial breaking down of its crystalline structure; in others, its presence is shown by the discolored bone being seen through the semi-transparency of the enamel." (*Bell on the Human Teeth*, p. 118.)

I have made the foregoing quotation from the work of Mr. Thomas

Bell, with whom I once conversed personally on the doctrine contained therein, for the purpose of expressing my entire dissent from the opinion held by most of the writers on this subject, in relation both to the local origin, and the immediate cause of caries, or dental gangrene. Some of these writers divide the disease into two kinds, which they distinguish by the names external and internal caries; while others inculcate the doctrine so hostile to all my experience and observation, that caries commences, as Mr. Bell says in the passage quoted, on the surface of the bone, under the enamel, and that the disease becomes visible through the semi-transparency of the enamel, which itself is destroyed by being broken away by mechanical violence. Now I must aver, that after a constant and extensively diversified practice of nineteen years, both in Europe and America, I have never known a solitary instance of this disorder which was not evidently occasioned from external causes on the surface of the tooth, penetrating first through the enamel, if on the body of the tooth, and then assailing the bony structure.

There are teeth that are faulty, both in their enamel and organization; owing, probably, to constitutional or hereditary peculiarities which have not, as I am aware, ever been satisfactorily explained by any author.

As to the cause of caries, I published my opinion many years ago, first in London, and afterwards in this city, and have seen no cause to espouse a contrary opinion. I consider the immediate and exciting cause of dental decay to be always external to the tooth itself, and to consist of certain corrosive menstrua, to which these organs are exposed from bodily disease, improper aliments, powerful medicines and the thousand other sources of acrid filth and destructive poisons that become concentrated in the mouth and deposited upon the teeth. These procuring causes of caries may indeed derive their origin from constitutional diseases acting upon the system at various periods of life, but whatever internal defect of structure a tooth may derive from original organization, how much soever it may be predisposed to take a diseased action under favorable conditions, still, the tooth never decays till externally affected by putrescent, or corrosive, or disorganizing matter, which breaks up its structure.

That such has been my uniform opinion, will be seen from the following extract from the work on the stomach and digestive organs, published by Dr. Thomas Hare, Fellow of the Royal College of Surgeons in London, in 1821.

"The theories concerning the cause of decay in the teeth which seem to have met most attention, are those referring it to an undue degree of compression exerted by the irlateral surfaces on each other, and to a putrefactive fermentation of extraneous matter lodging in the interstices. The former has been ably set forth by Mr. Bell, of St. Thomas's Hospital, in the Medico-chirurgical Transactions; the latter was published about two years ago, by Mr. Parmly." (page 269.)

(33) *A dream forgot, a tale of other years.*

Dr. Fitch alleges the following three modes in which disordered teeth contribute to the production of that distressing disease—the dyspepsy, or indigestion.

"First, by preventing a proper mastication of the food.

"Secondly, by the ulcerated and putrid matter which passes from the teeth and gums, along with the aliment, to the stomach.

"Thirdly, the irritation produced by diseased teeth, being often so great as to disturb the healthy functions of the system, and of the stomach in particular." (*Fitch on the Teeth*, p. 308.)

(34) *Most justly damned to everlasting fame!*

"The pain commonly termed the tooth-ache is one of the most excruciating to which we are liable. It is caused by an inflammation of the membrane lining the cavity. In inflammation, one of the consequences is a swelling of the part, which is generally followed by a diminution of the pain, the degree of which seems to be regulated by the resistance and compression which the inflamed vessels suffer from the surrounding parts. The membrane of the tooth being situated within a cavity which is incapable of extension, there must necessarily exist an insurmountable obstacle to the swelling of the membrane; and this it is which renders the pain so extremely acute. In some few instances, caries will proceed without being accompanied by any sensations; the tooth gradually breaks away, until the whole of it is removed." (*Fox*, Part II. p. 25.)

"The pain called tooth-ache, which Galen very properly considered the most cruel and grievous of all pains that are not mortal, seems clearly to be occasioned by decayed portions of bone, no matter how minute, acting by contact on the nerves of the teeth.—And I firmly believe the pain is never felt until the caries, which always acts from without inwards, has actually met a branch of nerve.

"No species of animal matter, in a state of decay, is so offensive to the vitality of the adjoining substance, whether nerve, or muscle, or membrane, or any part or portion of the living body, as decayed bone. How very small a portion of decayed bone in a tooth is capable not only of causing the most agonizing pains, but also of communicating a fœtor to the breath, is inconceivable by those who have not pursued the inquiry with minuteness: and this offensive matter, when it thus has an opportunity of acting, communicates, through the medium of the nerves, a sympathetic pain to the teeth which are perfectly sound." (*Hare on the Stomach*, p. 240.)

In addition to the preceding remarks, I observe, that the tooth-ache is sometimes so severe as to produce alarming derangements of health;

while at other times it is merely an annoying sensation, which can scarcely be termed pain. The cavity of the tooth, in most cases, is the original seat of this malady. But as the teeth are supplied by ramifications of those nerves which supply different parts of the face and head, it frequently happens that one or more of those parts may suffer more severely than the tooth itself.

Diseases in the wisdom teeth of the lower jaw affect the ear; and when those of the upper jaw are diseased, the temples generally become affected. The effects of disease in one tooth, from nervous influence, is sometimes felt in the opposing tooth of the other jaw.

No certain treatment can be laid down for the tooth-ache; it must be regulated entirely by a knowledge of the cause, whether arising from decay, the irritation of tartar, the application of cold, or merely as a sympathetic affection. The disease which occasions this malady is insidious in its progress, dangerous and sometimes fatal in its consequences; but the danger more frequently arises from an improper application of remedies, than from the disease itself. Powerful remedies for the tooth-ache, as well as for other diseases, are hazardous in the hands of the ignorant.

(35) *And tooth-ache came, the terror of mankind!*

" When pains in the teeth show a disposition to change their places with great facility, like all rheumatic affections, they may yield to the most insignificant means, even to the touch of some amulet, applied with an air of mystery and confidence which imposes upon the patient. Every one knows, that in timid people, the presence of a surgeon, in most instances, is sufficient, for a time, to dispel the pain of tooth-ache. It is particularly for these pains that some dentists have a favorite odontalgic elixir, of whose sovereign virtues they are so fond of boasting. These liquors are almost all spirituous tinctures, whose powerfully stimulating action often suffices to suspend the pain.

" In fact, a drop of the tincture of opium, or any one of the essential oils, applied to the part by means of a little cotton, may produce an instantaneous abatement of the pain, but which seldom fails, sooner or later, to return. Frequent successes of this kind, of which marvellous accounts are daily published, have successfully brought into vogue numerous elixirs and various other means, all more or less ridiculous." (*Gerbaux*, pp. 80, 83.)

" Doctor Sims, a celebrated practitioner in London, relates that he was such a martyr to the tooth-ache, that he was confined to his house for several weeks together by that malady, but after he avoided taking his food either hot or cold, he entirely escaped it. He was particularly careful not to take soup or any other liquid, of a temperature higher than ninety—eight degrees less than blood heat.

He was induced to try this experiment, by reflecting that heat expanded all bodies. When applied to a tooth, therefore, it must diminish its cavity, compress the nerve, and consequently produce pain. However defective this theory may be, the practice of endeavoring to preserve those parts in an equable temperature, will be found to be highly important." (*Duval.—Atkinson's translation*, p. 76.)

(36) *To mercy deaf, by sorrowing man accurst.*

The following characteristic lines are from the "Address to the Tooth-ache," by Robert Burns:—

"My curse upon your venomed stang,
That shoots my tortured gums alang,
And through my lugs gi'es money a twang,
                Wi' gnawing vengeance!
Tearing my nerves wi' bitter pang,
                Like racking engines!

"When fevers burn, or ague freezes,
Rheumatics gnaw, or cholic squeezes,
Our neighbors' sympathy may ease us
                Wi' pitying moan;
But thou—the hell o' a' diseases,
                Ay mocks our groan!

"Where'er the place be priests ca' hell,
Whence a' the tones o' misery yell,
And ranked plagues their numbers tell,
                In dreadfu' raw;
Thou—tooth-ache, surely bear'st the bell,
                Amangst them a.'"

"We were interrupted by Mr. L. He is one of your plain, common sense sort of people, practical, fixed in his own opinions, a little inclined to stoicism, with a dash of savage philosophy, partly affected to hide tenderer feelings, and about six feet and an inch high, without his shoes.

"'What's the matter with your face?' inquired he.

"'Tooth ache,' said I, 'all swelled: keeps me awake, and'——

"'Try my *nitri dulcis* and *alum pulv.*,' said W.

"'Curse your *nitri dulcis* and *alum pulv.*,' said L., 'there is but one cure for the tooth-ache, and that's a sure one,'

"I looked tremblingly up. He had his great, square fist doubled, as if he held something in his hand. He raised it to his mouth, and screwed around with the motion of a dentist, uprooting some huge, double grinder, with three diverging prongs. My friends were silent. I turned a little pale. He saw what an impression he had made, and with a grin that went to my very soul, added;—

"'Out with it, you fool, and there's an end. It's worth all the *nitri dulcis* and *alum pulv.* in the universe.'

"There was a melancholy truth in what he remarked. It sunk into my heart; I made up my mind; and when my worthy advisers left me, I walked around to Mr. ———. There was an awful silence—a moment of intense fear—a slight struggle—an agony—a cry from the heart's core—I came out the happiest of men."—(*Dreams and Reveries of a Quiet Man, by Theodore S. Fay, Esq.* Vol. I. p. 187.)

(37) *And stops the fearful progress of decay.*

As great disadvantages frequently arise when teeth are decayed, from their crowding against each other, it becomes expedient, with a view to stop the progress of incipient disease, to remove portions from their sides by means of a file; but, if this operation be not performed before considerable parts are decayed, it must not be expected to afford lasting benefit. The incisors and canine teeth may be filed with the greatest probability of success; but the bicuspides and molares have such large surfaces, that caries often extends itself by far too deep before it is observed, to be effectually removed by the file. Little advantage can be expected from filing, unless the whole diseased part be effectually removed.

It is proper to observe, that there are some teeth, which, although attended to at an early period, are but little benefitted by the operation, either from some original defect in their organization, or certain peculiarities of constitution: but this is, by no means, commonly the case; and the instances of its proving essentially serviceable are so innumerable, that it may be recommended with the highest confidence of success.

(38) *Performs in nature one substantial use.*

The benefits of the operation of stopping the teeth are so truly important, that it is impossible to recommend it too earnestly to the public; for thousands of the most useful teeth, which otherwise would, on account of their painfulness, be sacrificed by extraction, may thus be preserved, not only for many years, but for the remainder of a long life.

The finest teeth are commonly the most highly organized, and therefore become more acutely painful when only a very small portion is decayed. The operation of stopping will always succeed, if performed before the decay has reached the sensible part of the tooth, unless its cavity be superficial, or of a funnel shape, and not capable of being sufficiently deepened for retaining the gold. In such cases, all attempts at stopping it will be fruitless. But if the depth be sufficient towards the sensible part of the tooth to allow of the excavation being made larger, or directed obliquely or otherwise, as may be most eligible for receiving and securing the gold, the caries may be so effectually arrested as to cause no farther uneasiness to the patient.

"There is no object connected with dental surgery of more importance than that of stopping. There is none better deserving the attention of the student, nor is there any in which the dentist may more successfully display his professional skill. Were we to judge, indeed, from the almost innumerable cases of failure which occur, we might conclude that the uncertainty of the operation was so great as essentially to diminish its utility and importance. These cases, however, generally occur under the management of ignorant persons, who are alike incompetent to the mechanical and the surgical part of the operation, and who are equally incapable of choosing a proper time for its performance." (*Snell on the Teeth*, p. 151.)

"If properly done," says Dr. Fitch, "this is one of the most useful operations in dental surgery; and if practicable, it bears the preference to any other operation for the cure of diseased teeth. It should be an object of solicitude in every case, when we are called upon to extract or file the teeth, to obviate both operations by plugging them, if in any way expedient or practicable." (*Fitch on the Teeth*, p. 398.)

"I have no hesitation in affirming this to be one of the most important and useful operations that can be performed." (*Sigmond.*)

"By the beautiful and useful operation of stopping or plugging teeth which are greatly decayed by caries, they may be preserved for many years; in most instances during the remainder of life: and not unfrequently, from ten to twenty teeth may be preserved by this operation in the same individual." (*Koecker*).

(39) *And pointing to the portal of the tomb.*

"We have a most humiliating reflection, in observing the powers of renovation which are enjoyed by the inhabitants of shells, some of which, after their testaceous coverings have been broken, whether on the edges, in holes, or in cracks about the middle, no matter where—possess the power of directing, from their secretory vessels, a sufficient quantity of calcareous matter and animal gluten to repair the injury effectually;—whereas man has not the power of directing a single particle, either of earthy or glutinous matter, from his secretory system, to repair a small deficiency of enamel, which is literally a modification of porcelain shell, and the loss of which makes every accession of cold actually distressing." (*Hare on the Stomach, p.* 277.)

(40) *A shining panoply of orient pearls.*

The chief object of attention in artificial teeth is, that the substance be durable, and not liable to change color. Human teeth and those of small animals have been heretofore supposed to answer the best purpose, while teeth cut from those of the sea horse have ranked next in importance; but lately, they have been formed with great success from certain materials known to the manufacturers, and have been variously denominated, according to the taste of the artist—silicious pearl teeth—mineral teeth—porcelain teeth—incorruptible, and terro-metallic. Under these titles, teeth of various degrees of excellence are now made, both in Europe and this country, and from their great beauty, cleanliness, durability, and unchangeableness in regard to color, will no doubt be generally adopted. They certainly possess some advantages over any other substitute for original teeth.

Of the various methods which have been devised for fixing artificial teeth, the most successful is, that of fastening a new tooth by means of a pivot to a sound fang. When thus fastened, the tooth may be worn for a considerable time without producing any inconvenience. The next method is, to adapt a tooth to the aperture from which another has been extracted, and to fasten it to the adjoining teeth. A third method is, to supply the place of teeth by means of a gold plate, to which the substitutes are firmly affixed, the plate being fitted to the gums, and supported by means of springs. A fourth mode of supplying teeth, by which whole sets may be provided and worn with great convenience, is to prepare gold or ivory frames, fitted closely to the gums, on which the teeth are firmly arranged, and, by means of springs, made to perform all the most essential functions of original teeth.

(41) *Like Him who fills unnumbered worlds with joy.*

"He who pursues his own advantage only, so far as he can do so without injuring another, is just; he who gives up his superfluity rather than do harm to another, is noble; he who works only for the common welfare, is the most noble, and no one but him deserves that name." (*Spurzheim.*)

(42) *Disturb the system when themselves destroyed.*

"I have been made happy by discovering that I have only added to the observations of other physicians in pointing out a connexion between the extraction of decayed and diseased teeth, and the cure of general diseases. Several instances of the efficacy of that remedy in relieving head-ache and vertigo are mentioned by Dr. Darwin. Dr. Gatu relates that M. Petit, a celebrated French surgeon, had often cured intermittent fevers, which had resisted the bark for months, and even years, by this prescription; and he quotes from his work two cases, one of consumption, and one of vertigo, both of long continuance, which were suddenly cured by the extraction of two decayed teeth in the former, and two supernumerary teeth in the latter case.

"These facts should not surprise us, when we recollect how often the most general diseases are brought on by very inconsiderable inlets of morbid excitement into the system. A small tumor, concealed in the fleshy part of the leg, has been known to bring on epilepsy. A trifling wound with a splinter or a nail, even after it has healed, has often induced a fatal tetanus. Worms in the bowels have produced internal dropsy of the brain, and a stone in the kidney has excited the most violent commotions in every part of the system.—Many hundred facts of a similar nature are to be met in the records of medicine.

"When we consider how often the teeth, when decayed, are exposed to irritation from hot and cold drinks and aliments, from pressure by mortification, and from the cold air, and how intimate the connection of the mouth is with the whole system, I am disposed to believe they are often unsuspected causes of general, and particularly of nervous diseases. When we add to the list of those diseases the morbid effects of the acrid and putrid matters which are sometimes discharged from carious teeth, or from ulcers in the gums created by them, also the influences which both have in preventing perfect mastication, and the connection of the animal function with good health, I cannot help thinking, that our success in the treatment of all chronic diseases would be very much promoted by directing our inquiries into the state of the teeth of sick people, and by advising their extraction in every case in which they are decayed. It is not necessary that they should be attended with pain in order to produce diseases, for splinters, tumors, and other irritants before mentioned, often bring on diseases and death when they give no pain, nor are suspected as causes of them. This transition of sensation and motion to parts remote from the place where impressions are made, appears in many instances, and seems to depend upon an original law of the animal economy." (*Medical Inquiries by Dr. Rush*, Vol. I. p. 199.)

(43) *And spreads disease with every pulse that beats.*

That the general health of the body is affected by the state of the stomach and lungs, is a proposition which few, if any, will deny.—

And that the condition of either depends on the nature of whatever is introduced into it, will likewise be readily admitted. The effects which the state of the teeth may have upon the lungs, may therefore be considered in the first place. The chemical process which is carried on in the mouth, by means of its moisture and heat, will always, in a greater or less degree, cause the putrefaction of whatever extraneous matter is permitted to lodge upon or between the teeth. The air, even in the most open situation, is affected by passing over any putrescent substance. Now as the mouth is the chief passage by which the air enters the lungs, and as the air is affected by whatever it passes over or through, the lungs can never receive it in a pure state, except the mouth, through which it is introduced, be perfectly clean and healthy. But while any extraneous matter is permitted to accumulate and remain on the teeth, the mouth will naturally become unclean and unhealthy, imparting an infectious taint to the air which is inhaled.

"Fetid breath is occasioned by the state of the mouth, and seldom results from the condition of the stomach or digestive organs, as erroneously supposed. The escape of vapor from a disordered stomach can produce only a temporary effect, but from uncleanliness of the mouth, we find the taint constant and habitual; and unless the cause be eradicated, all the spices and perfumes of the east, though they may for a moment conceal, cannot remove it. Cleanliness of the mouth, therefore, is of great importance to the general health; in fact, the danger of the lungs from a constantly putrid effluvium has been strongly commented upon by the faculty of medicine, as a leading cause of pulmonary consumption." (*L. S. Parmly's Lectures.*)

"We respire," says Dr. Fitch, "about twenty thousand times in twenty-four hours, and yet, for months and years, this vast quantity of air is rendered poisonous by one or more diseased teeth. How little does it avail an individual, if by every possible means the purity of the air is preserved; if no impurities are suffered to remain in the streets; if his tenements are kept clean, his apartments ventilated; if he make distant journeys at a great expense of time and money, for the benefit of pure air, and, at the same time, carry the *cloaca* of filth in his own mouth? If this state of the breath, caused by bad teeth, so affects the olfactory nerves of a person near an individual having bad teeth, what must be its effect upon the delicate and sensible tissues of the lungs of the person himself? Nature has formed the lungs most delicate and sensible, and susceptible to the slightest injurious impressions:—She has also finely tempered the atmosphere for its safe and healthy reception in these delicate organs; but an accident, or a disease, may render it impure, unfit for respiration, and cause it, instead of harmonizing with the lungs in the most perfect manner, to exercise a baneful influence, armed with pestilence, and scattering the seeds of disease over the lungs, thus pouring the streams of deadly poison through every vein in the system. The matter thrown off from the teeth in a state of disease and putrefaction, and also some states of diseased gums, is very acrid in its nature, as is demonstrated by its vitiating the saliva so much as to dissolve and oxydate metals, even silver, and to tarnish gold. We know that many of our organs have the power of resisting, for a length of time, in a wonderful manner, the effects of injurious impressions; but with the lungs I am disposed to believe that even slightly injurious impressions, if continued, will, sooner or later, prove to them a cause of disease and disorganization." (*Fitch on the Teeth*, pp. 300, 301.)

(44) *Each dental malady a thousand ways.*

"These sympathetic pains arising from carious teeth, proceed from the intimate connection that subsists between the branches of the fifth and those of the seventh pair of nerves. The pain in the ear is therefore sympathetic, arising from disease in the dens sapientiæ. From the connexion which subsists between these two pairs of nerves, it happens that not only inflammation in the teeth causes a sympathetic pain in the ears, but disagreeable and unharmonious sounds produce a sympathetic effect upon the teeth, and occasion that unpleasant sensation called the teeth being set on edge." (*Fox on the Teeth*, Part II. p. 31.)

"The sympathetic affections to which the tooth-ache gives rise, are exceedingly various and important; though it is only of late years they have been properly understood, and the attention of medical men directed to their true source. It not unfrequently happens, that parts the most remote become the apparent seat of pain, from the exposure of the nerve of a tooth. I have seen this occur, not only in the face, over the scalp, in the ear, or underneath the lower jaw, but down the neck, over the shoulder, and along the whole length of the arm." (*Bell on the Teeth*, p. 155.)

(45) *And oft the maniac sufferer expires.*

"A person complained," says Dr. Fuller, "of seemingly violent spasms in the head, which instantly deprived her of sense and motion, and she fell down lifeless for some time. She had been subject to these fits, I think, for two or three years, but of late they had become very frequent; no pain succeeded them, nor were they preceded by any symptoms, except by a trifling pain which darted into one of the third grinders that was decayed:—nor did she know what tooth-ache was. Having seen the most astonishing effects of caries in these teeth, I recommended the tooth to be extracted, and on removing it, she expressed herself by saying, that it seemed to pull up the root of the complaint.

"I have twice extracted teeth when the most severe pain was in the elbow; in both instances, it was one of the large molares of the under jaw; and in both, the pain of the elbow vanished on removing the teeth." (*Fuller on the Teeth*, p. 71.)

(46) *That feels the living impulse of the heart.*

It may be necessary to explain briefly the passage of the food through the alimentary canal, and the manner in which the chyle is converted into blood.

The food is received into the mouth, masticated between the teeth, imbued with saliva, and forced through the constrictors of the pharynx down the œsophagus into the stomach. It is then mixed with the gastric juice, which is secreted from the inner surface of the stomach; and this is found to be the immediate agent for effecting the change that the food undergoes. A knowledge of no part of physiology is more useful, than of the digestive organs.

"The peculiar properties of gastric juice render it one of the most powerful productions of the animal body. It is not a simple dilutent, but a solvent; and has the power of breaking down the food, and converting it into a soft, homogeneous paste, known by the name of chyme. So powerful is its faculty of solution, that the hard bones which dogs devour cannot resist its action. It not only unites with and dissolves the food, but changes its nature and composition. It is found to be of an antiseptic property, and corrects putrescency instead of inducing it. After the food has been properly acted upon by the gastric juice, it passes through a muscular contraction of the stomach, called the pylorus, into the duodenum. Here the food undergoes other changes, equally as important as those already produced on it in the stomach:—it mixes with the bile brought by the ducts from the liver, and with the pancreatic fluid from the pancreas. Having remained some time exposed to the action of these fluids, it is separated into two parts, an excrementitious, and a nutritious."—(*Richerand's Physiology, p.* 119.)

"After the food has remained a certain time within the duodenum, and this separation taken place, it proceeds along the other smaller intestines, the jejunum and ilium. By means of the peristaltic contractions of these intestines, the nutritious part of the food is said to be pressed out, and this is taken up by the inhalent mouths of the lacteals. The alimentary mass parts gradually with its nutritive particles, and passes from the small into the large intestines, the cœcum, the colon, and rectum.

"The nutritious part of the food taken up by the lacteals, is conveyed by different branches into the thoracic duct, and thence into the left subclavian vein, where it mixes with the blood brought back from the upper extremities. The subclavian vein terminates in the vena cava, and this in the right auricle of the heart." The reason for the chyle entering the blood in the subclavian vein is explained as follows, by Dr. Paley:—"The chyle enters the blood in an odd place, but perhaps the most commodious place possible, viz., at a large vein in the neck, so situated with respect to the circulation, as speedily to bring the mixture to the heart. And this seems to be of great moment; for had the chyle entered the blood at an artery, or at a distant vein, the fluid composed of the old and new materials must have performed a considerable part of the circulation, before it received that churning in the lungs which is probably necessary for the intimate and perfect union of the old blood with the recent chyle." (*Paley's Natural Theology.*)

"It is now necessary that this new venous blood, which is of a dark color, should undergo changes indispensable to life. The right auricle contracting, the blood is propelled into the right ventricle, and from the ventricle it is farther forced through the pulmonary artery into the lungs. While circulating through them, it is exposed in the air cells to the atmospheric air taken in during respiration:—a change takes place; the blood becomes of a florid red color, subservient to the principles of life, and is returned by the pulmonary veins into the left auricle of the heart; and passing from them into the left ventricle, this ventricle contracts and propels the blood, by means of the aorta, to all parts of the body.

"Different opinions are entertained of the change which the blood undergoes in the lungs. Some physiologists imagine that it receives oxygen from the air: others that it gives off its superabundant carbon, and that the air is expired as carbonic acid gas. It is here sufficient to state, that the change is necessary to life, and that the blood sent to the lungs is of a dark color, while that which returns from them is a florid red, subservient to the functions of the animal economy." (*Waite's Manual*, 1826, p. 70.)

(47) *May rise terrific from that single source!*

"Mechanical trituration is not the only change that the food undergoes in the mouth. Subjected to the action of the organs of mastication, which overcome the force of cohesion of its molecules, it is at the same period imbued with saliva. This fluid, secreted by glands placed in the vicinity of the mouth, is poured in considerable quantity into that cavity during mastication.

"The saliva is a transparent and viscous fluid, formed of about four parts of water and one of albumen, in which are dissolved phosphate of lime, of soda, and of ammonia, as well as a quantity of muriate of soda. Like all other albuminous fluids, it froths when agitated, by absorbing oxygen, for which it appears to have a strong affinity. Its affinity for oxygen is such, that we may oxydize gold and silver by triturating in saliva, thin leaves of these metals, which are of such difficult oxydizement. The irritation occasioned by the presence or desire of food, and by mastication, excites the salivary glands, which swell and become so many centres of fluxion, towards which the humours flow abundantly.

"It is estimated that about six ounces of saliva are secreted during the average time of a meal. It flows in greater quantity when the food is acrid and stimulating. It mixes with the mucus copiously secreted from the glands, and with the serous fluids exhaled by the exhalent arteries of the mouth. There can be no doubt that the saliva, mixing with the food by the motion of the jaws, absorbs oxygen, and unites to the alimentary substances a quantity of that gas fit to bring about the changes they are ultimately destined to undergo." (*Richerand's Physiology*, p. 96.)

(48) *Nor asks a staff to guide him to the grave.*

The following judicious observations, made nearly two centuries ago, will serve to convince the reader that the opinions sustained in this volume are neither new nor singular.

"The terrible pains and diseases of the teeth do chiefly proceed from two causes. The first is from certain filthy phlegmy matter which the stomach and vessels do continually breathe and send forth, which does lodge or centre in the mouth, especially between the teeth, and on the gums; and some people having fouler stomachs than others, such do breathe forth very sour, stinking, phlegmy matter, which does not only increase the pain, but causeth the teeth to become loose and rotten. And for want of continual cleansing and washing, those breathings and this phlegmy matter turns to putrefaction, which does eat away the gums, as though worms had eaten them. And this defect is generally attributed to the disease called the *scurvy;* but it is a mistake: the cause is chiefly, as is mentioned before, from the stomach, or for want of cleansing.

"This distemper of the teeth and gums does also proceed from the various sorts of meats and drinks, and more especially from the continual eating of flesh, and fat sweet things, compounded of various things of disagreeing natures, that do not only obstruct the stomach but fur and foul the mouth, part thereof remaining upon the gums, and between the teeth. For all such things do quickly turn to putrefaction, which does by degrees corrupt both the teeth and gums. Besides, our beds take up near half the time of our lives, which time the body is not only without motion, but the bed and coverings do keep it much hotter than the day-garments, especially of those that draw the curtains of their windows and beds so close, that the pure spirits and thin refreshing vapors of the air are hindered of having their free egress and regress, which does dull and flatten the action of the stomach; and this is the chief cause why suppers lie hard in the stomach, and require more than double the time for perfect concoction, that the same food does when a man is up and in open air: for this element, if it hath its free influence, is sucked in, as by sponges, through all the pores of the body, and does wonderfully refresh, comfort, open and cleanse all the parts, having power to assist and help concoction: but hot, dull, thick airs, do destroy the action of the stomach, and as it were suffocate the pure spirits, drying up and consuming the radical moisture. Therefore the night does foul the mouth more than the day, furring it with a gross slimy matter, especially those that have foul stomachs, and are in years, which ought to be well cleansed every morning.

"Whatsoever are the disorders in the body, the mouth does always partake of them; besides the evils that the variety of food, and the improper mixtures of flesh and fish, and many other things, which do foul and hurt both the teeth and gums. When any person is disordered with inward diseases, does not the mouth quickly complain of the evils thereof? This very few consider in time.

"It is to be noted, that most people do attribute the diseases of the teeth to colds, and rheums, and other outward accidents. It is true, outward accidents will further this disease, but then there must be matter beforehand, otherwise outward colds can have no power to cause this pain. The same is to be understood in all stoppages of the breast, and other obstructions, as coughs, and the like. For, if any part be obstructed, or there be matter for distemper, then, on every small occasion of outward colds, or like accidents, nature complains. If your teeth and gums be sound, and free from this matter, take what colds you will, and your teeth will never complain, as daily experience doth show. For all outward colds, and other accidents of the like nature, have no power to seize any part of the body, except first there be some inward defect or infirmity: suppose the teeth be defective, then the disease falls on that part; or if it be the head, eyes, breast, back, or any other part or member of the body that is obstructed, the evil is felt in that part. Therefore if the mouth be kept clean by continual washings, it will prevent all matter which may cause putrefaction: and then colds, and the like accidents, will have no power to seize this part, or cause this terrible pain. Even so it is in all other parts of the body. If temperance and sobriety be observed in meats, drinks, and exercises, with other circumstances belonging to health, then stoppages, coughs, colds, and other obstructions, would not be so frequent on every small occasion; for temperance has an inward power and operation, and does as it were cut off diseases in the very bud, preventing the generation of matter whence distempers do proceed, increasing the radical moisture, and making the spirits lively, brisk, and powerful, able to withstand all outward colds, and other casualties of the like nature.

"There are many various things, of divers natures, prescribed by physicians and others, as washes to preserve the teeth and gums; but most of them, if not all, to little or no purpose, as daily experience teaches: for all high, sharp salts, and things of a sour or keen nature, do rather cause the teeth to perish, than the contrary; as do all hot spirits, be they what they will: many have destroyed their teeth by the frequent use of such things, and it hath hardly ever been known that such things have ever cured or prevented the aching pains of the teeth, but water only. Many examples I could mention, if it were convenient. Physicians and others do daily prescribe such things for the cure and prevention of this disease of the teeth, which most of them do know by experience can do no good, but rather the contrary: but when people come to them, they must give them something for their money; for interest and ignorance have more affinity with this sort of people than virtue, and the true knowledge of the nature of things. Most certain it is, that the shepherd and husbandman do know far better how to prepare the meat for their cattle, and also how to preserve them from disorders, than many physicians do their food or physic: and a man shall understand more by conversing with this sort of people, than with the learned: for the shepherd and husbandman understand something of nature; but most of the learned are departed from the simple ways of God in nature, putting out their own eyes, and then boasting what wonders they can see with other men's: they have invented many words to hide the truth from the unlearned, that they may get the greater esteem. This hath chiefly been done to advance pride and interest; so that the divine eye is departed from many of them, who never make any inspection into the true nature of things, being contented to take other men's words, let it be right or wrong, as long as they have authority and law on their sides, wherefore should they trouble their weak heads?

"The best and most sure way to prevent the diseases and pains in the teeth and gums, is every morning to wash your mouth with at the least ten or twelve mouthfuls of pure water, cold from the spring or river, and so again after dinner and supper, swallowing down a mouthful of water after each washing; for there is no sort of liquor in the world so pure and clean as water; and nothing doth cleanse and free the teeth and gums from that foul matter which does proceed from the breathings and purgings of the stomach, and from the various sorts of food, so well as water; the use of other washes is to little or no purpose; but whosoever do constantly wash their mouths with water, as is before mentioned, shall find an essential remedy.—All hard rubbing and picking of the teeth ought by any means to be avoided, for that is injurious to them. Also whensoever you find your mouth foul, or subject to be slimy, as sometimes it will more than at others, according to the good or evil state of the stomach, though it be not after eating; at all such times you ought to wash your mouth. This rule all mothers and nurses ought to observe, washing the mouths of their children two or three times a day; and also to cause their children to swallow down a little water, which will be very refreshing to their stomachs. For milk does naturally foul and fur the mouth and teeth, and if they be not kept clean by continual washing, it causes the breeding of children's teeth to be the more painful to them.

" Few there be that understand or consider the excellent virtues of water, it being an element of a mild and cleansing nature and operation, friendly unto all things, and of universal use: but because it is so common, and so easily procured, I am afraid that many people will be like *Naaman* the *Syrian*, when the prophet *Elisha* advised him to *wash seven times in the river of Jordan to cure his leprosy;* it being the ignorance and folly of most people, to admire those things they do not know, and, on the other side, to despise and trample under foot those things and mysteries they do know; which the learned in all ages have taken notice of: for, should some people know what apothecaries and others give them, they would despise the physic, and have but little respect for their doctor.

" All housewives do know, that no sort of liquor, be it what it will, will cleanse and sweeten their vessels, but only water; all other liquors leaving a sour stinking quality behind them, which will quickly cause putrefaction: but water in its own nature is clean and pure, not only for all uses in housewifery, and the preservation of health; but the saints and holy men of God have highly esteemed this element, by using it in the exterior acts of divine worship, as having a simile with the Eternal water of life, that does purify and cleanse the soul from sin. (*Tryon's Way to Health*, pp. 17—21.)

(49) *Reveals the glories of her kindred sky.*

" If the great distinctive attribute of man be the faculty of speech, that speech can never be complete or perfect, without two arches of teeth to modulate the sound, and give proper utterance to the words. Indeed it is obvious to every one, that when the teeth are lost, the speech becomes imperfect, and often scarcely intelligible.

" This circumstance makes them valuable beyond measure to a public speaker, and their preservation ought to meet due attention from those who wish to shine, either in the senate, at the bar, or in the pulpit.

" Without these instruments of utterance, the graces of eloquence are lost, and the power of impressing the mind and convincing the understanding, if not destroyed, is considerably diminished." (*L. S. Parmly's Lectures*, p. 42.)

" Health is so necessary to all the duties, as well as pleasures of life, that the crime of squandering it is equal to the folly; and he that for a short gratification brings weakness and diseases upon himself, and for the pleasure of a few years, condemns the maturer and more experienced part of his life to the chamber and the couch, may be justly reproached, not only as a spendthrift of his own happiness, but as a robber of the public,—as a wretch that has voluntarily disqualified himself for the business of his station, and refused that part which Providence assigns him in the general task of human nature." (*Dr. Johnson.*)

"Health, I conceive, is often maintained at the expense of that vital power, which, in a more natural state, would have carried us to age." (*Thackrah.*)

"The old man who has preserved his teeth in good condition, is much less frail than he who has lost them early by inattention. The youth who is well endowed by nature in this particular, promises to lead a life more vigorous, than he whose teeth have prematurely decayed." (*Gerbaux*, p. 20.)

On the subject of a happy old age, produced by sobriety, we find the following account in the writings of Addison. (*Spectator*, Vol. III. No. 195.)

"The most remarkable instance of the efficacy of temperance, towards the procuring long life, is what we meet with in a little book published by Lewis Cornaro the Venetian; which I the rather mention, because it is of undoubted credit, as the late Venetian ambassador who was of the same family, attested more than once in conversation, when he was in England. Cornaro, who was the author of the little treatise I am mentioning, was of an infirm constitution till about forty, when, by obstinately persisting in an exact course of temperance, he recovered a perfect state of health; insomuch that at four-score he published a book which has been translated into English under the title of "Sure and Certain Methods of obtaining a Long and Healthy Life." He lived to give a third and fourth edition of it; and after having passed his hundredth year, died without pain or agony, and like one who falls asleep. The treatise I mention has been taken notice of by several eminent authors, and is written with such a spirit of cheerfulness, religion, and good sense, as are the natural accompaniments of temperance and sobriety. The mixture of the old man in it, is rather a recommendation than a discredit to it."

The work alluded to by Mr. Addison has been recently republished in this city by Mr. Graham, lecturer on health and longevity, who has prefixed to the neat little volume the following remarks:—

"After an experiment of, at least, six thousand years, man knows about as little how to live, as he did in the infant period of the world. Indeed, there is no subject that demands the exercise of human intellect, which is more intricate and difficult to understand, than is the science of human life. And yet the popular opinion is, that every man can ascertain by his own *experience* what is best for him, and how he ought to live: and that no general rule can be laid down, which will be equally suitable to all mankind, because there are differences of *constitution*, and *temperament*, and *predisposition*, &c. 'Some,' it is said, 'with great regularity of habits, and temperance in diet, enjoy good health and live to great age, while others, pursuing the same course, are always sickly, and die young; and on the other hand, some, with great irregularity and intemperance, enjoy health and live to become very old. Therefore, what is best for one man may not be for another, and, consequently, it would be impossible to prescribe any mode of living which would be suitable to all constitutions and circumstances."

"This reasoning certainly has the aspect of plausibility, to such as take but a very hasty and superficial view of the subject. But surely, if we will honestly investigate this matter with a candid and truly inquiring mind, we shall see things very differently, and be led to very different conclusions. We shall then find the true statements to be these:—

"All men, with a good natural constitution, who are regular in their habits and temperate in their diet, and in other respects correct, as a general rule, enjoy health, and live to old age; but some men with a feeble constitution and diseased body, though regular and careful in their habits, and temperate, but not always judicious in their diet, are delicate and sickly all their lives and die early, or before they attain to old age; and would have suffered much more and died much sooner, had they been irregular and intemperate:—while on the other hand, some men, with a remarkably good and vigorous constitution, and many of whose habtis are conducive to health and longevity, enjoy a considerable degree of health and attain to great age, in spite of their irregularities and intemperance: nevertheless, most persons who are irregular and intemperate become diseased early, and die before they reach old age, or even the meridian of life." (*Introduction to Cornaro by Sylvester Graham, New York*, 1833, 178 pages 18mo.)

The following passages are taken from Cornaro's work.

"Oh holy and truly happy regularity! How holy and happy should men in fact, deem thee, since the opposite habit is the cause of such guilt and misery! so that men should know thee by thy voice alone, and thy lovely name; for, what a glorious name, what a noble thing, is an orderly and sober life."

"I will give an account of my recreations and the relish which I find at this stage of life, in order to convince the public that the state I have now attained is by no means death, but real life. They will see, not without the greatest astonishment, the good state of health and spirits I enjoy; how I mount my horse without any assistance or advantage of situation; and how I not only ascend a single flight of stairs, but climb up a hill from bottom to top, afoot, and with the greatest ease and unconcern; then how gay, pleasant, and good humored I am: how free from every perturbation of mind: and every disagreeable thought; in lieu of which, joy and peace have so firmly their residence in my bosom, as never to depart from it. I contrive to spend every hour of life with the greatest delight and pleasure, having frequent opportunities of conversing with many honorable gentlemen; then I betake myself to reading some good book, and when I have read so much as I like, I write; endeavoring in this as in every thing else, to be of service to others to the utmost of my power.

"Besides this, I have my several gardens supplied with running water, and in which I always find something to do that amuses me.

"Nor are my recreations rendered less agreeable and entertaining by my not seeing well, and not hearing readily every thing that is said to me; or by any other of my faculties not being perfect, for they are all, thank God, in the highest perfection, particularly my palate, which now relishes better the simple fare I eat, wherever I happen to be, than it formerly did the most delicate dishes, when I led an irregular life.

"And if it be lawful to compare little matters, and such as are esteemed trifling, to affairs of importance, I will farther venture to say, that such are the effects of this sober life, that at my present age of eighty-three, I have been able to write a very entertaining comedy, abounding with innocent mirth and pleasant jests.

"Such are some of the recreations of my old age."

To this latter passage Mr. Graham appends the following note:—

"Gentle reader! art thou still in early life, and dost thou sometimes contemplate old age as necessarily a state of feebleness, and decrepitude, and gloom? Or, art thou already what the young call old, and dost thou feel thyself entering into the dreary winter of thy bodily existence? Seest thou nothing but weakness, and infirmities, and the last waning of life's flickering light, in the prospect before thee? Seems thy unjoyous way downward into the vale of death covered with a mist whose density increases as thou descendest, wrapping thee in deeper and yet deeper gloom, and blearing thy vision, and taking away thy other senses by slow, but yet too painfully perceptible degrees; and shutting thee up to the solitary consciousness of exhausted power and approaching death? And with such prospect before thee, and in such a state, art thou incredulous when the venerable Cornaro tells of the comforts and the cheerfulness of his green old age? Does it seem to thee impossible that at the age of ninety or a hundred years, a man should have that health, and vigor, and vivacity, and cheerfulness, and increased enjoyment, of which Cornaro speaks?

"Doubt not, beloved reader! but be assured, if thou wilt live the life of the righteous, thou shalt reap this reward. Wrong not thy body nor thy soul! Obey the laws of life! Live as thou shouldst, in harmony with the universal and inflexible government of God, established constitutionally in the great system of nature's laws, and thou shalt experience the health, the serenity, the peace, the cheerfulness, the happiness, and even the raptures of Cornaro! And when thy life is spent, and thou art called to make thy exit from this changing scene, thou shalt walk erect in patriarchal manliness, like Moses, to the mountain top, with vision unimpaired, and scarce diminished strength, and there, in the glorious prospect of a better world, thy God himself will spread thy death-bed for thee, and take thee to himself without a pain.!"

I cannot deny myself the pleasure of making one more extract from Cornaro, touching the influence of sobriety on the religious hopes of man.

"I must farther add," says this good old man, "though it may appear impossible to some, that, at this age, I enjoy at once two lives: one terrestrial, which I possess in fact; the other celestial, which I possess in thought: and this thought is equal to actual enjoyment, when founded upon things we are sure to attain, as I am sure to attain that celestial life, through the infinite goodness and mercy of God. Thus, I enjoy this terrestrial life, in consequence of my sobriety and temperance, virtues so agreeable to the Deity; and I enjoy by the grace of the same divine Majesty, the celestial, which He makes me anticipate in thought:—a thought so lively, as to fix me entirely on this object, the enjoyment of which I hold and affirm to be the utmost certainty. And I hold that dying in the manner I expect is not really death, but a passage of the soul from this earthly life to a celestial, immortal, and infinitely perfect existence. Neither can it be otherwise:—and this thought is so superlatively sublime, that it can no longer stoop to low and wordly objects, such as the death of this body, being entirely taken up with the happiness of living a celestial and divine life; whence it is that I enjoy two lives. Nor can the termination of so high a gratification as I enjoy in this life, give me any concern: it rather affords me infinite pleasure, as it will be only to make room for another glorious and immortal life."

CONCLUSION.

Having appended to the poem such notes as my leisure for several months past has enabled me to select, I feel it necessary to remark, that although on many of the subjects discussed, the notes are not so full nor so illustrative as I could have wished, yet they are the best that my limited opportunity would permit me to select. A very laborious profession, in connexion with other duties, has completely engrossed that time which I would have gladly devoted to this object, and at some future day I hope to be enabled to do greater justice to a subject that demands the attentive consideration of every individual. The most useful advice with which I can conclude these remarks is, to urge on every individual the necessity of aiming at the prevention of disease altogether, which can in a great measure be effected without engrossing more time than its importance merits.

This is a subject which demands the attention of parents, and those who are entrusted with the care of children. It should be the first object of every person so situated, to habituate children to clean their teeth, at least twice a day, and when this practice has been once adopted, it will be continued as a matter of course. Besides this, from the age of six to twelve years in particular, a dentist should be consulted three or four times a year, and at a later period, once or twice for the purpose of examining the teeth, and counteracting, by the timely removal of such causes as may produce disease, any mischief which is likely to take place.

In London and Paris, and I believe in all the larger cities of Europe, the principal academies and boarding schools are regularly attended by dentists, for the purpose of having the children's teeth examined, and of performing such operations as they may require when necessary. I should be glad to see this plan more universally adopted in our large cities, for I am convinced the advantages arising from it are incalculable; for if proper care and attention be not paid during the time teeth are shedding, a countenance, however naturally beautiful, may, in consequence, be totally disfigured; and it frequently happens, that an unpleasing countenance, although united to an amiable mind, produces a dislike that is not easily overcome.—"It is, therefore, (says Mr. Murphy), a duty incumbent on parents, and those who have the care and education of youth, while they do justice to their minds, not to overlook their personal advantages."

"No face, however pleasing and prepossessing, can ever be complete in its attraction, where the mouth is disfigured. However worthy of admiration by natural symmetry, a still and silent countenance may be, we at once lose the grateful impression when a disclosure of bad teeth is made by the influence of any excitement.—The circumstance either attaches disgrace to the individual, for present want of cleanliness, or to its parents or nurse, for past neglect. Even the laugh, the test of good humor and openness, which invites to cordiality and confidence, fails to produce a reciprocal effect when we are disgusted by a foul mouth." (*L. S. Parmly's Lectures*, p. 44.)

I have thus adduced several arguments, in order to impress upon the minds of my readers the importance of my subject, as far as it relates to an early and attentive care in the management of the teeth. No fact that I have brought forward can be considered in the slightest degree exaggerated, for it will be supported by the feelings of every individual that reflects upon it. If, from what has been said, the subject shall meet due weight, I shall have performed a duty highly pleasing to myself, from a consciousness of having pointed out the right way, which, if practised, will not only add to happiness and comfort, by a freedom from pain and other inconveniences, but also to the improvement of personal appearance at every age of life.

The commencement of disease is too generally looked upon as a matter of little importance; and thus, but few persons take any notice of its progress, until the agonizing pain of tooth-ache forces it upon their consideration; and when the disease has been permitted to extend itself so far, it seldom happens that it can be effectually remedied by any other means than extraction; but as it is not always in the power of every individual to have recourse to a dentist on the first attack of tooth-ache, the patient may possibly obtain a temporary relief by applying to the diseased tooth a strong solution of camphor in spirits of wine, which if it prove not altogether successful, has at least the advantage of safety, and this is much more than can be said of most of the celebrated remedies. Every extreme of heat and cold should be avoided, as both are equally liable to cause pain in the teeth. Attention to cleanliness of the teeth in early life cannot sufficiently be insisted on, since it is evident that most of their diseases arise from extraneous matter being suffered to remain upon them; and no time, therefore, should be lost, in removing whatever has accumulated as soon as it is discovered.

The brush and powders, which are the common means had recourse to, will never more than half perform this office, as they act only on the outer parts, and thus leave the interstices entirely untouched. Some tinctures may for a time give a whiteness to the enamel, but they are certain ultimately to injure its texture, and render it more liable to decay. In short, it may be concluded, that in proportion as any dentifrice, paste, or lotion, whitens the enamel, its structure is injured or destroyed. The only means necessary to preserve its color is to remove whatever may collect around the teeth, and thus allow them to possess their natural whiteness and polish.—The best method to effect this is with a brush and water; should this prove insufficient, powders composed of Armenian bole, prepared chalk, Peruvian bark, or charcoal, may be used with very great advantage. But, even when the teeth have been thus cleaned, the insterstices are not cleared. This may be effected by passing between the teeth a thread of waxed silk, thereby to dislodge whatever may have collected on their sides.

The means which have been pointed out for the prevention of disease will be found of much greater advantage to society at large than all that has been said respecting the treatment. And I cannot too strongly urge the importance of this particular object.

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Cutler Wm. Daily, Baltimore,	1
Cutler Sam'l Jackson, Baltimore,	1
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Cobb Anson, Brooklyn,	1
Clark C., Jacksonville, Ill.	1
Clark James, Springfield, Ill.	1
Cassill J. F., Upper Marion, Col. Mo.	1
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Clark James, Lebanon, O.	1
Coppel Chas. Preston, Eng.	1
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Crofoot E., E. Middletown Con.	1
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Grandhomme M. P., Paris, France,	1
Gidney Eleazar, Man., England,	1
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Grant C W, Newburg, New-York,	1
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Gaines B B, Cassville, Georgia,	1
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Gunn ——, Nashville, Tennessee,	1
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Herd, Doctor, Brooklyn,	1
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Hulihen J. P., Wheeling, Va.	1
Hawes & Allen, New-York,	1
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Helsby ——, Manchester, England,	1
Hudson Edward, Philadelphia,	1
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Hallified Doctor, Petersburg, Va,	1
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Hill A, Norwalk, Connecticut,	1
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Halleyman W F, Maytinton, S C,	1
Imrie—Dentist, Man. England,	1
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King Doctor, Brooklyn,	1
Kelley Elbridge G., Newburyport, Mass.	2
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Keen Benjamin F., Hills, Ga.	1
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Kingsbury C A, Philadelphia,	1
Kimball Horace, New-York,	1
Keemy B M, Hudson New-York,	1
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Levett M., New York,	1
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Laroque Edward, Baltimore,	1
Lapham B. B., Baltimore,	1
Lawrence J., M. D., Tarboro, N. C.	1
Leadbetter John, Alexan. D. C.	1
Lyon S. K., N. Orleans,	4
Lloyd T. B., Manchester, Eng.	1
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Laird O. P., Columbus, Ga.	1
Lamphire Wm., Alexan. D. C.	1
Lawrence S W, Philadelphia,	1
Lee Joseph, M D, Camden, S C,	1
Lawrence E B, Crawfordville, Ga,	1
Loomis J C, Carlisle, Pa,	1
Latimer James, Madison, Morgan Co, Georgia,	1
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Marvin, Doctor Brooklyn,	1
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Macall Leonard, M. D. Balt.	1
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Mason, Doctor, Brooklyn,	1
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Merritt Charles, Bridgeport, Conn,	1
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Pent George, *M* D, Lawrenceville, Virginia,	1
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A TREATISE

ON

FIRST DENTITION,

AND THE

FREQUENTLY SERIOUS DISORDERS

WHICH DEPEND UPON IT.

BY M. BAUMES,

PROFESSOR OF PATHOLOGY AND NOSOLOGY, IN THE MEDICAL SCHOOL OF
MONTPELLIER—MEMBER OF THE MEDICAL ACADEMY
OF PARIS, &C. &C. &C.

A WORK CROWNED BY THE ROYAL SOCIETY OF MEDICINE, OF PARIS,

IN THE YEAR 1783.

TRANSLATED FROM THE FRENCH,

FOR THE AMERICAN JOURNAL OF DENTAL SCIENCE,

BY THOMAS E. BOND, JR. M. D.

PROFESSOR OF SPECIAL PATHOLOGY AND THERAPEUTICS, IN THE BALTIMORE
COLLEGE OF DENTAL SURGERY.

NEW YORK;
Printed by Fraetas & Kelley,
No. 426 Broadway.
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1841.

TRANSLATOR'S PREFACE.

The art of Dentistry, long neglected and much abused, is at length beginning to receive the attention it deserves. Able and zealous men are devoting themselves to the study of Dental Pathology, and to the formation of rational and scientific rules of practice in this department of medicine; and a combined and powerful effort is about to be made, to elevate the pursuit of dentistry to the importance and dignity of a distinct and honorable profession.

One of the greatest hindrances to the attainment of this very desirable end, is found to be the scarcity of good books upon dental medicine. Of the many that have been written upon this subject, few are worth perusal; and the greater number of those that are valuable, are only to be found in languages with which many who would gladly read them are unacquainted.

It is evident that no progress can be made in the advancement of the dental art, until this want of elementary books shall have been supplied; therefore there is no way in which the good of the profession can be so immediately and certainly promoted, as by throwing open to the many the information hitherto locked up in foreign languages, and only accessible to the few.

It is with this design I have undertaken the translation of the present work. It is one that should be in the hands of every physician, and more particularly of every dentist. No other commendation of it is necessary, than to call attention to the fact, that it is a prize essay —crowned by the Paris Royal Society of Medicine.

It is due to myself to say something with regard to the manner in which the translation has been performed.

The reader need not expect to find literary excellence in the following pages. My object has not been to improve the style of Baumes, but to translate his work. Occupied as I am by the cares of my profession, I could not accomplish *this* without much sacrifice and self-denial. A physician engaged in practice, has but little leisure, and that little he values highly.

I make no apology for the haste in which the translation has been executed. Under the circumstances, it must have been done hastily or not at all. As it is submitted to the public almost without revision, it is to be expected that many errors will be found in it; but I trust that some leniency of criticism will be shown for one, who has laboured cheerfully, if not successfully, for the benefit of a profession to which he does not belong, without expectation of other reward, than that which springs from a sense of usefulness.

THOMAS E. BOND, JR.

Baltimore, April 3d, 1841.

A TREATISE
ON
FIRST DENTITION,
AND THE
DISORDERS WHICH DEPEND UPON THAT
DEVELOPEMENT.

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1. The life of man is distinguished by certain periods, during which, the body acquires a new degree of perfection by the development of its organs, and of the functions which belong to them. These periods are characterized by certain phenomena which depend upon the nature of the developing organ, and the excellence of the functions that pertain to it. When regular, they result in real increase and perfection: when irregular, they become the cause of suffering and even of death. When regular, they shew that nature exercises free command over the body she has formed, for upon this they depend: when irregular, they manifest errors of this same nature counteracted by our constitution and by other physical causes under the influence of which we live.

2. The acquisition of the Teeth is the first of these developments. It takes place at a time when the body is excessively excitable; when pain produces severe effects, and when the irritation consequent upon the local development, largely influences the rest of the system. Dentition, therefore, is a very important epoch in the history of man, and it is extremely useful to examine it in all its different aspects. In it may often be found the cause of the death of a great number of infants, and the foundation of certain serious disorders which are subsequently developed, or which remain for life as taints in the constitution.

Before proceeding to the details necessary to prove what I have just advanced, it is necessary to premise something concerning the teeth—their nature—their number and the laws that govern their eruption.

Summary Exposition of the Anatomy and Physiology of the Human Teeth.

3. The French call 'dent' (and the English *tooth*) that which the Greeks have named '*odous*,' and the Latins '*dens*.' It has been said that this latter word 'dens' is but an abreviation of the participle '*edens*,' eating; but this etymology is not at all satisfactory, and indeed it is of little consequence to know the true root of the word. It is almost useless to define the teeth. They are little bones, variously shaped, according to the use they are to subserve, composed of a body terminated by a depression known as the neck, and of one or more roots. These bones, of a peculiar structure, commence to protrude from the jaw bones some time after birth, to serve as ornaments of the mouth—to assist in articulation, and more especially to perform the function of mastication, which is the first act of digestion,—consisting in the chewing of the food which by this process becomes thoroughly mixed with the saliva.

4. The teeth, compared with other bones, differ from them in that they offer to the sight a white, hard, compact substance which renders them stronger, less liable to alteration and more beautiful. This white substance is called *enamel*. This covers the bony structure, which, rising above the neck, constitutes the *crown*, or that which, standing out from the alveolar process and the gum, forms the visible part of the tooth. It is known that bone cannot be long exposed to the air without becoming black and decaying. In order to prevent this in the case of the teeth, it is necessary that the bony matter which composes them, be protected by a substance, incorruptible by the air and the various substances which pass through the mouth. Therefore the enamel is not spread over the internal and concealed parts of the teeth, but is made to sheathe and protect that portion which is external and exposed. It is thickest in the places where we observe the eminences upon the teeth; these little eminences being entirely formed by this substance.

5. So far as concerns the bony structure of the teeth, these little bones are composed of phosphate of lime mixed with gelatino-albu-

minous substances. The phosphate of lime has been well known for a long time; and that which for ages had been supposed to be a peculiar earth, has been at length discovered to be a saline substance, obeying the general laws of combination and crystallization.

6. Although it is easy to perceive that the enamel is something different from the bone, it is not so easy to discover its nature. M. Josse de Rennes has thrown some light upon this matter in a paper containing the result of his physical and chemical examinations of the teeth, published in the Journal of Medicine, Autumn number, year 10.

7. According to M. Josse, the enamel is white, smooth, polished, transparent, very brittle and extremely hard. In its fracture it presents a well marked and regular crystallization, made up of an assemblage of little shining crystals, very closely compacted and needle-shaped. In all the surfaces which it covers, it appears to be disposed in radii, a little oblique and horizontal, almost perpendicular to the body of the bone; forming at the point of contact with it, two angles, one superior acute, the other inferior and obtuse.

8. As to the peculiar nature of enamel, M. Josse was on the point of concluding that this substance is an oxalate of lime, and at that time he thought he discovered some correspondence between it and the oxalato-calcareous zoolythes, or urinary calculi, formed of oxalate of lime, a sort of calculi that are frequently and perhaps exclusively met with in children. Abandoning this idea, which did not appear well founded, M. Josse finally concluded that the enamel is a pure phosphate of lime, regularly crystallized, consequently without parenchyma, but susceptible of decomposition and of that kind of alteration which we observe it to undergo. If M. Josse had so directed his researches as to observe the action of phosphoric acid on lime, it is possible that he would have discovered that the enamel does not differ from the body except in this, that the latter is a calcareous *phosphate*, and the former a phosphite or a phosphuret of lime.

9. It has been generally believed that the roots of the teeth, and even their cavities, have on their surfaces a greater or less quantity of enamel. Some have gone so far as to advance the opinion that the enamel is as necessary upon the internal as upon the external part of the teeth,—the external to limit their growth, and on the internal to maintain the diameter of the canal nearly in the same state. But these opinions are not at all well founded; and the latter is

altogether unjustifiable. Bichat* appears to me to have victoriously refuted them. According to him, the enamel is only found upon the crown. Many anatomists think that it extends also a little way over the root, misled doubtless by the extreme whiteness of the roots of some teeth, which renders it impossible to detect any line of demarcation. But a very simple experiment demonstrates the incorrectness of this opinion. This consists in macerating the tooth in nitric acid, diluted with water. The acid attacks immediately both the root and the crown, but the one becomes yellow, as almost all animal substances do when acted upon by this acid, while the other preserves its color, becoming indeed more white than before. This experiment proves also, that their respective composition differs essentially. This difference, however, is not unlimited, for acids whiten the teeth only in corroding them, and although the enamel is not at all influenced by the air, it is accessible by many substances that cause it to lose its color and even destroy it altogether.

10. Thus the teeth are formed by two substances; the one analogous to the bones; the structure of which is condensed, much like that which constitutes the petreus portion of the temporal bone, and the other harder and more compact still, which is called enamel. The whole forms a bone which has a cavity, greater in youth and very small in advanced age. In this cavity is lodged the soft part of the tooth, which appears to be nothing more than a flexus of vessels and nerves peculiar to each tooth, and tied together with cellular tissue. This soft substance is as exquisitely sensitive as the medullary pulp; so that the teeth are susceptible of violent pain and are capable of involving the whole system in a community of suffering, and of producing more or less serious lesions through extensive sympathy.

11. We have seen that the enamel only covers the body, otherwise called the crown of the tooth. This is the visible part, and forms nearly the half of the tooth. The other half is concealed, partly by the gum which is attached circularly at the bottom of the crown to the place known as the neck of the tooth, and partly in the cavity, formed in the dental border of each maxillary bone. The species of articulation which fixes the root of the tooth in this cavity, is known by anatomists as 'gomphosis.' The root is simple or bifurcated—double or triple, according to the tooth in question. The adherence of the gum to the neck forms a circular pad, from which,

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* General Anatomy.

many membranous bands are sent off to insinuate themselves into the dental substance. Thus nature has multiplied means to fix the teeth in their sockets and to enable them to perform their functions.

12. The first teeth, which pierce the gum in infancy, are not permanent. They fall out about the age of seven years, and are known as the milk teeth, or the deciduous teeth. The second set which take the place of these are the permanent, or the adult teeth. These differ in number and in size. The milk teeth are smaller and almost always twenty in number when the first dentition is completed. Each jaw is furnished with ten of them. The permanent teeth are never less than twenty-eight, nor more than thirty-two. Many persons have only thirty, including the dentes sapientiæ, or wisdom teeth. Authors have recorded occasional cases of irregularity in the number of these teeth. The anatomist, Columbus, states that one of his children had three rows of teeth. Valerius Maximus and Pliny had noticed cases of the same kind. History records that one of the sons of Mithridates had two ranges of them, and Hercules was said to have had three. Arnold, a physician of Breslaw, stated that he met with a child of fourteen years of age that had seventy-two teeth, thirty-six in each jaw. They were sound and regularly arranged in two rows, except the incisors, which were slightly displaced. I, myself, have seen two children having each a double set of teeth, but they were in bad health, and the phenomenon was complicated with a scorbutic condition of the gums, and great general debility. I have recorded one of these cases in the old Journal of Medicine. They differed essentially from those described by Professor Sabatier. He has noticed that in some persons in whom the maxillary bone was very short, some teeth were crowded into the rear of the dental arch and there appeared like a double set, though in fact the number was no greater than usual. Rusych has also mentioned adults in whom he has observed supernumerary teeth. Such cases however are but feeble exceptions to the general laws upon which is founded the history of dentition or odontography.

13. Man is provided with three kinds of teeth, which have received different names according to their forms and their use. Some are called incisors or cunei-form, others canine, or conoid, or angular—others molar and cuspidated, divided into bicuspid and multicuspid. Each jaw has four incisors which occupy the centre; two canine placed immediately after the last, one on each side, and eight or ten molars

ranged after the canines. Of these there are four or five on each side; and when the individual has but thirty teeth the superior jaw has only eight molars, while the inferior has ten. This only relates to the permanent teeth.

14. As to the milk teeth there are but twenty of them as we have before said; of this number there are eight incisors, four canines, and the first eight molars equally divided between the jaws. ' All these teeth are distinct from one another; nevertheless there have been some very rare exceptions to this rule. Plutarch and Valerius Maximus relate that Pyrrhus, king of Epirus, and one of the sons of Prusias, king of Bythynia, had only a single bone in each jaw which took the place of the teeth. Bernard Jengha reports that he found in a heap of bones preserved in the hospital Saint Esprit, in Rome, a skull with an inferior maxillary bone, to which there were but three dental bodies, one which had the place of the four incisors, and two canines, and two others which seemed to represent the five molar teeth on each side.

15. In these cases, were the teeth really united, or were they not only seemingly so through a complete incrustation of tartar, as has been verified by other observers? Eustachias has observed in an aged person three or four molar teeth, united by a hard and almost flinty substance. M. Sabatier, has seen a young girl fifteen or sixteen years old, who was scorbutic, all of whose teeth were encased in a flinty crust which united them and separated them from the gums. A dentist took away this tartar, and all the teeth became distinct and separate.

16. The incisor teeth of infancy differ little from those of adult age. The denomination, incisors, is derived from their function which is to *incise*, or cut—some have called them cunei-form because their roots have the form of a wedge. These teeth are convex externally, and concave internally, somewhat triangular in form—very thick about the neck, thin and sharp along their edge, which is semi-spherical, thick in their roots, which, almost always single and finishing in an obtuse point, are conical, flattened on the sides and are somewhat longer than their body. The two middle or anterior incisors of each jaw, are thicker and larger than the lateral incisors that are next to them; and generally the teeth of the upper jaw, especially the anterior teeth, are larger than those of the inferior. This excess in size makes it necessary that the incisor teeth of the superior jaw should describe an arc of a greater circle than the teeth of the lower jaw.

This has been remarked by Bertin. This arrangement gives greater facility in cutting the food, as the teeth are made to move upon each other like the blades of scissors ; besides it rounds the face more elegantly, and prevents the chin from projecting disagreeably, which would be the case if the lower jaw were larger. Besides as the upper jaw is immovable, it is necessary that the lower should be thrown within it, in order to augment its power, and to occasion the least fatigue to the muscles which move it.

17. The *canine* teeth, so called from their resemblance to those of the dog, are also termed *angular*, because they are situated opposite to the angle of the lips, and *conoid*, because of their shape. The canine teeth of the upper jaw have also been called eye teeth, either because they are situated beneath the eyes, or from the supposition that they are connected with the orbit. The canine teeth are thicker than the incisors: they are but slightly concave on their internal face, and their superior extremity is pointed. Their roots which are commonly divided into two branches, are thicker and longer than those of the incisors, and indeed are longer than they, in proportion to their bodies. It is thought that the canine teeth have a stronger tendency to increase in length than the other teeth. When this vice exists, unless it be counteracted by the file, it interferes with mastication, and embrases the whole economy of the dental system.

18. The term molar as applied to the teeth is derived from their property of grinding—depending upon the size of their surfaces—much after the manner of millstones. The term cuspid announces that they are provided with little eminences or points, and those of bicuspid and multicuspid indicate that they have two or more points. Bertin says, that the molar teeth may be considered as consisting of several canine teeth united together, and their form does not contradict this idea. The molar teeth of infancy, are eight in number as I have already said. Each jaw has four of them, two on each side. They come immediately after the canines, are larger than the adult teeth which correspond to them, and present a variety in the surface of the crown. These molars have a surface relative to their size. They are shaped like a long square, rounded at the angles, and are composed of a body more especially called the crown, and of a root which is longer than those of the preceding teeth. This root is ordinarily divided into two or three branches, which separate more or less from one another, are longer than their body, and hang themselves

in the little cells hollowed out in the common alveolars, which is not that of the permanent teeth. The roots of the permanent are longer than those of the temporary molars. The surface of the crown of the molars of the inferior jaw, bears ordinarily five eminences placed along the borders: three on the exterior and two on the interior side. The molars of the superior jaw have on the contrary only four eminences: one on the internal, and three on the external side; and of these three, the middle one is the longest. The middle of the surface of the tooth is hollowed out.

19. The alveoli which receive the roots of all these teeth are distinct from one another, separated by a bony partition and lined interiorly by a membrane interposed between the alveolar wall and the tooth. It is in these cavities that, long before the completion and eruption of the teeth, their gums may be found; for the jaws of the fœtus are closed all along their free borders; but in the interior there exists a range of little membranous follicules which are separated by minute partitions, and which before the formation of the teeth have the arrangement that these shall ultimately present.

20. These little follicules have for their invelop a serous membrane, and they contain a pulp situated at the extremity of the vessels and nerves that penetrate them. The membrane that serves to invelop the follicule, forms a shut sack without opening, which first lines the walls of the alveolus to which it adheres by filaments. When it reaches the place where the nerves and vessels penetrate, the membrane leaves the alveolus and is doubled or reflected over the vessels and nerves, accompanies them in their course and finally expands itself over the pulp of the tooth in which they terminate. Thus the membrane has two parts; the one adhering to and lining the alveolus, the other free and covering over the pulp; just as the pleura has two parts, the one adhering to the ribs, the other covering the lungs. The whole consisting of one piece which is doubled to perform the distinct office. The pulp and the vessels, although invested in the duplicature of the membrane are not contained in its cavity. The interior of the sack contains nothing but the secretion which lubricates it, and every thing indicates that this secretion is albuminous.

21. Such are the gums of the teeth. It is not easy to discover at what time these membranous follicules are formed; but it appears that their ossification dates its commencement from the fourth or

fifth month. It is on the pulpy portion of the membrane of the follicule, and at its floating extremity, that the first point of ossification appears. It soon spreads, and takes the precise form of the summit of the crown of the tooth, which it subsequently forms. Developed first from the side next the gums, it stretches afterwards from the side of the vasculo-nervous pedicle and moulds itself upon this in its course towards the point where the vessels enter the alveolus. Next to this the crown is the first formed; and at the time of birth, we find the twenty teeth of the first dentition already far advanced.—All the crown of them is formed, and the commencement of the root presents itself under the shape of a large quill, with extremely thin walls which goes on lengthening and thickening, until it reaches the bottom of the alveolus, when the tooth becomes too large for the cavity and breaks forth.

22. The mechanism of the structure, and of the birth of the teeth, may be readily understood after these details. The pulp of the tooth is the first part formed, and is at first the most considerable portion of the structure. It appears that the bony part forms next, and then the enamel forms upon the outside of this. As ossification advances, that part of the follicular membrane which lines the alveolus remains fixed and adherent, while the portion corresponding to the pulp at first free from the other side, becomes on its side adherent to all the dental cavity which it lines, and of which it forms the proper membrane intermediate between the pulp and the bony substance. As the jaw bone is developed; and the ossification of the tooth progresses towards the root, the tooth can no longer be retained in the alveolus, the cavity of which is at the same time straitening and filling up.—Hence the tooth must be pushed forward, piercing the alveolar membrane, the pulpy tissue of the gum, and the mucous membrane of the mouth, which covers it. This effect is produced by the gradual pressure, aided undoubtedly by the structure of the gum which gives way in the progress of the eruption.

The two membranes, the alveolar and the mucous membrane of the mouth, being gradually worn away and pierced, but having been contiguous, their borders unite and adhering together to the neck of the tooth they constitute the circular pad which we have remarked to exist upon this part of the tooth. It ensures the stability of the organ.

The formation of the root in first dentition, is rarely so perfect as in the second. The internal cavity also remains very large, and the pulp is more considerable.

23. It is very rarely that the teeth pierce the gum before birth. There are nevertheless some examples of this. Columbus, Van Sweiten, Marcellus Donatus, after Anteginus and Pliny, have cited cases of the kind. Louis the Great was born with two teeth. Haller mentions nineteen children who were the subjects of the same phenomena. We read in the Gazette of Health, year 1780, page 145, that on the 13th of August, Madame de la Neuville was happily delivered of a fine daughter, having two incisor teeth in the upper jaw, and three days afterwards these were followed by two others on each side of these, making six in all; but this infant died in convulsions occasioned by this precocious eruption. Polydorus Virgilius reports the case of a child born with six teeth. We might find similar examples, nevertheless they are rare; and it remains essentially true that the first dentition is begun in the alveoli during the continuance of the fœtus in utero, and is not manifested by eruption until after birth.

24. The eruption of the deciduous teeth is gradual; and ordinarily they appear two by two at intervals more or less distant. This eruption which commences generally at the age of 7 or 8 months, is not ordinarily completed until the thirtieth month. In many, however, dentition is terminated within two years. The two smaller incisors of the inferior jaw make their appearance first. Fifteen days or three weeks afterwards, the corresponding teeth are cut in the upper jaw, and successively the two lateral incisors below pierce the gum together, and are followed by the two in the upper jaw. After these, succeed the two canines of the lower jaw—then the two of the upper jaw—then the first two molars below, one on each side, pierce the gum together, followed by their corresponding teeth above, and then the first dentition is completed by the eruption of the two other molars below, followed by two above.

25. We may say that generally the incisor teeth are cut first, and in the order we have described. Nevertheless, in cases where the dentition has not been difficult, it has been observed, very rarely it is true, that the lateral incisors have appeared first. A physician of my acquaintance knew a solitary case where the canines made their appearance before the incisors. Raw relates one of the same kind. It happens often with regard to the canines, that they are not cut until

after the first four molars, and sometimes not until the eruption of all the molar teeth. In some cases the teeth of the superior jaw have appeared before those of the inferior. Cases have been met with, very rarely however, in which the eruption of the teeth has been very tardy. Van Swieten (1) knew a case of a vigorous girl whose first tooth was not cut until the nineteenth month. Charles Rayger (2) has mentioned another where the four canines did not make their appearance for the first time until the thirteenth year, after eight days of pain in the head and eyes, and epileptic convulsions. Fauchard (3) has left an account of a child five or six years old, in whom the greater part of the teeth had never appeared, and who had none except some in the anterior of the mouth. Brouget (4) speaks of a child twelve years of age which had but the half of its proper number of teeth, and whose alveolar border had acquired the hardness of the gums of aged persons. I knew at Saint Gilles a bailiff named Vaizen, who never had a tooth. Pherecrates, according to Valla, never had any teeth.

26. First dentition has two periods. The first is that in which the ossification of the teeth is going on internally. We have seen how this is effected. Then the tooth presses forward; the gums swell; the salivary secretion is increased, and the tooth pierces the tissues which cover it. This is the second period of the eruption of the teeth. This double phenomenon is proved by the accidents which happen sometimes three or five months before the teeth make their appearance externally. There are, indeed, certain cases in which the children do not suffer at all except during the ossification of the teeth; the accidents of dentition ceasing with them as soon as the second period arrives.

27. I have said that the twenty-seven teeth which create the first dentition, have generally appeared at the end of the second year of life. The molars, which complete it, appear the last and are necessary to grind the aliments. Nature has established this law. What inference should we draw from it? This certainly, that nature in taking about two years to complete the deciduous dentition, seems to have determined the period during which the infant should be nourished at the breast. Is it not a violation of nature to wean the child

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1. Comment. tome iv. s 1374.
2. Collect. Academie, part, etrang. tom. 1, page 401.
3. Le Chirurgien Dentiste, tom. I.
4. Educat. Med. des enfans, tome 1.

before it has been provided with the implements of mastication? How can a sick or languid child whose gums are inflamed or irritated and painful, incise and chew its food? The milk of the nurse is under these circumstances both the food and the remedy, and to deprive these tender ones of both the one and the other is a cruelty which may result in the most painful consequences. Observers have but one opinion upon this point. Levret who confined his attention to midwifery and the diseases of young children, saw such deplorable effects of premature weaning, that he recorded his protest against it in his writings. He says, when an infant recently weaned falls sick in dentition, its mouth becomes very hot; it refuses food; it can only drink; serious diarhœa attacks it, and if this continues long, marasmas results. In this condition we do not know what to do for it or what to give it with probability of success, and many such perish. If the breast had been left them, it would have been their comfort and the support of nature. Indeed we see children under these circumstances seize the breast with avidity, suck some mouthfulls and return often to that which while it nourishes them refreshes the mouth, softens the gums, and facilitates the eruption of the teeth. Honey, the brains of hares, the marrow of deer, and the grease of bears &c., all these are poor and unavailing substitutes for mother's milk.

28. This work is intended to expose cruelties equally great. Writers on medicine have devoted but little time to these things, and their observations are scattered through volumes on midwifery and diseases of women and children. It is time that their observations should be collected into a body of doctrine. The order I have taken to accomplish this, consists in giving a solution to the question proposed by the Royal Society of Medicine of Paris, in these terms. *What are the means of preserving nursing infants from the accidents of dentition, and of remedying these disorders when they are incurred?"*

My work naturally divides itself into two parts. In the first place to discuss the causes which creating disorder in the dental system, injure its mechanism and embarrass dentition; that is to say, to inquire into the causes which can derange dentition, and note the means of preserving nursing children from the accidents to which they are exposed at the period. In the second place I will endeavour to describe the evils which depend upon dentition, and to point out the remedies proper for them.

PART FIRST.

Of the causes which may derange dentition, or of the means of preserving nursing children from the accidents to which dentition exposes them.

29. There can be no doubt that dentition of itself, is not necessarily attended with serious or painful phenomena. Nature could not attach to the development of our parts, real danger to life, or such suffering as must directly threaten it. Nevertheless, all experience teaches that dentition is to be dreaded. It is said that the one-sixth of children perish from the accidents of dentition, and it is often difficult, and sometimes impossible to prevent these disorders. It is therefore natural that practitioners should seek to discern what are the causes which can derange dentition, and render it painful or fatal.

30. Opinions have varied upon this important subject. Some have seen nothing to cause these accidents but the degree of sensibility, which nature has imparted to young children; such have not considered that the gums are not very nervous organs, that the nerves do not play an important part in dentition, and that there are in the economy of infancy, many acts which, much more than the development or formation of the teeth, might occasion these serious accidents which are apt to occur at this period. It is true that morbid sensibility may contribute greatly to the suffering which infants experience in dentition, but to look no farther than this, would be to examine but a small part of the causes that render this period dangerous.

31. Others have looked no farther than to the fact of the pressure made by the roots of the teeth upon the alveolar periosteum. These have not considered that the shooting of the teeth, characterized by the enlargement of the alveolar walls, the distention of the gums, occasioned by the formation of the body or of the crown of the

teeth, &c. is an epoch often more dangerous than that of the organization of the roots, which besides would do much more harm in compressing and binding the soft and pulpy part of the tooth, than the serous membrane which performs the function of a periosteum, and lines the interior of the gum and the proper cavity of the teeth.

32. Others again have confined their attention altogether to the strong resistance of the gum to the passage of the teeth. The molars particularly from their breadth of surface, have appeared to augment the effect of this resistance, and to increase the evil of it, and in the process of dentition the mambranous tissue which the tooth must pierce or destroy, is very little raised up, before it is ruptured, while in polypus and other tumours, which take their origin sometimes under the membrane of the gums, it is very much more distended, and indeed in such cases it does not give way at all but only is raised up as Bichat* has justly remarked.

We know the opinion of Herissant, and Janke, and Armstrong, about the gum, which the first of these observers has called *temporary* to distinguish it from that which is permanent, and upon the little importance that we should attach to the destruction of that gum ; and although on the other hand we are met by the opinions of those who have dwelt upon the sensibility of the dilated and inflamed gum, sympathizing by means of its nerves, which ceasing to be pressed upon, have acquired all their properties, with many other parts and organs of the body, yet it is almost certain that the structure of the gums cannot be an important obstacle to dentition.

33. Indeed, if the organic state of the system, (30)—if the compression of the periosteum (31)—if the resistance of the gum which must be opened by bodies, some of which are blunt (32)—are the principal sources of danger in dentition, why are not these dangers constant and inevitable? Why are not all infants exposed to the disorders in question? Why also does it happen that the period of the shooting (pousse) of the teeth, which must not be confounded with the eruption, is often the only period of danger? Why do not brutes partake with men the sorrowful evils of dentition? Why are second dentition and the cutting of the wisdom teeth unaccompanied generally with these disorders? Why is the end of the period of dentition ordinarily more critical than the commencement?

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*General Anat. vol. 3, page 95.

34. Rosen,(1) who has paid much attention to the diseases of children, has given out more exact notions of the common causes of deficient dentition. 'When,' he says, 'a child has come to its full term, and is born of healthy parents, and when besides, the mother has restrained her passions during pregnancy—has preserved a tranquil mind and avoided excesses in aliment—and when, moreover, the child has had from its birth good milk—the teeth are always cut easily enough and with little pain. The more the circumstances differ from these, the more difficult is the dentition, and the more danger may be apprehended to the life of the child.' 'A father,' says the same celebrated Swedish physician in another place, 'who is infirm —a mother who gives way to her passions, or who has committed improprieties in eating, during her pregnancy—or a nurse, whose milk is of a bad quality—these are causes of difficult dentition and frequently through it, of death to the child.' (2)

35. Thus the obstacles that impede the organization and eruption of the teeth—the accidents that surround and mark the epoch of dentition, are almost all foreign to the infant. These obstacles and accidents are of several kinds: When we examine them by the light of experience, we find that they depend upon a concourse of circumstances incompatible with the true precepts of infantile hygiene, and that these evils are more numerous and more serious. / 1st. As the nervous mobility of the child is great. 2nd. As its constitution has been radically injured by a succession of errors committed in raising infants. 3d. And finally, as the infant labours under some malady which interferes more or less with the process of dentition, and embarrasses its necessary acts. I will seek under these three heads, the accidents liable to accompany dentition, and deduce from them the most efficacious and certain method of prevention.

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1. Treatise on diseases of infants.
2. Treatise on diseases of infants, page 44.

CHAPTER I.

Of mobility considered as the chief cause of difficult dentition.

36. Among the attributes of organized tissues which enter into the composition of living bodies, we remarked the facility with which the solids endowed with life and the sensibility which emanates from it, obey the impression of agents which operate upon them, the promptitude of the movements which result, and the degree of action attending these movements. We remarked also the facility with which the fluids, equally endowed with vital power, and the properties which it gives, yield to the effect that puts them in motion, the activity of their circulation, and the effects produced by their motion. This two-fold facility which is near akin to disease, constitutes mobility, whose results, as they are connected with dentition, I am about to consider.

37. In writing upon the causes of the convulsions of infants* I could not forbear to describe the state of the constitution proper to mobility, or that which favours its different effects. I have shown that this mobility is principally connected with a certain delicacy of the organic tissue, and results from the little density of the molar elements. The same condition is manifested in the fluids, by a greater fluidity, and in the solids by less cohesion. The nerves expand more freely in the solids whose substance is loose, and here they preserve their full sensibility, while in the parts whose texture is close the nerves being strongly compressed, and benumbed, give scarcely any evidence of activity. This we see to be the case in the bones, and in the gums themselves, while in their normal condition, for then they are but little sensitive, but when their tissue becomes engorged, dilated and expanded, as we see in some diseased conditions, they then give evidences of increased sensibility, and manifest the effects of it.

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* Treatise on Infantile Convulsions; their Cause, Treatment. Chap. 1, page 14.

38. By their very nature then, children are liable to great mobility. The gelatenous and albuminous juices abound in their economy; the cellular tissue, the lymphatic vessels and glands, the nervous pulp, the mucous system in general are greatly expanded. To these circumstances are due the plumpness of form, the exquisite sensibility, and the abundance of mucous and serous secretions. Every thing is done rapidly, but with a kind of inconsistency. The child cries and weeps, smiles and chatters almost at the same time. It is easily irritated, and its irritation endures but for a moment. Its motions are quick, but they are feeble; its excreted fluids are large, but they retain much of their nature; the seal of the animal is scarcely impressed upon them, and he can hardly perceive in them the debris of the body, which is decomposed to be renewed. The appetite is great, the digestion quick, and nevertheless its products are not well assimilated. In a word, all the functions prompt to act, but incapable of long continued effort, are excited and languish; again exerted and suspended, showing an inconsiderable medley of activity and inertio of force and debility, in the midst of which, and in spite of the predominant condition of imperfection and weakness, we discover traces of that power which can raise the child to manhood, and enable it to triumph over the dangers which menace it on every hand.

39. It was in view of these great truths that the celebrated commentator of the great Boerhaave, remarked that undoubtedly the tension and irritation of the gums frequently caused the most violent epileptic attacks in children during dentition, while adults could bear without the least symptom of convulsions, the most cruel tooth ache and the severest cholic. Moser* has enlarged upon this idea, and confirmed the truth of it.

40. Every time that the effect of impression and sensation shall be very much greater than is proportionate to the cause that produces it, the mobility will exist in all its fulness, and dentition will be dangerous through this very excess of mobility. This assertion needs no further evidence than an examination of the gums during dentition, and the connexions which these parts have with different organs and their functions.

41. As long as the organization of the teeth causes no pain in the alveoli, the bones and the compact tissue that covers them undergo no

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* Dissert. Med. de ortu dentium et symptemalibus quee civea dentitionem securrunt, page 24.

change of structure or condition. The nerves that are distributed throughout this tissue are compressed, and manifest only obscure sensibility. Nothing occurs in the mouth that can put the general sensibility to the test, and the system at large receives no impairment. This is the state of a child, until the fourth month. Until this time, the alveoli, whose borders had been but little elevated, and whose cavities were still shallow, had been the seat of no operation that could influence the living economy. But after the epoch just indicated, these same cavities are prolonged ; the osseous borders which constitute a part of them, dilate and elevate themselves ; and the alveoli, which at birth, and for some time afterward are depressed, enlarge, project, and press upon the gums. This is the period when the teeth are forming and preparing to pierce the gum.

42 The gums receive many threads of the two last branches of the fifth pair of nerves; but considering that they enter a very compact tissue, we infer that they impart but little sensibility to the gum, which indeed is the case. But when the gums swell and distend, their sensibility, at first latent, develops itself and becomes more or less exquisite. What we have said of the gums, applies also to some extent to the serous membranes, that form the alveolar and dental periosteum.

43. By means of the nerves above mentioned, the gums and the periosteum have relations with many parts of the body, particularly with the viscera of the chest and abdomen. These relations are established by means of two nervous threads that the most anterior branches of the fifth pair of nerves furnish to compose, when joined to the threads that the sixth pair give off, (according to many anatomists,) the origin of the great intercestal, or sympathetic nerve.

Anatomy teaches us that the great sympathetic furnishes branches to the viscera of the chest and abdomen, and that it communicates also with the nerves of the neck, and those of the superior or thoracic, and inferior or pelvic extremities, by the means of gangliens, which we find on dissection, near the origin of the greater number of the nervous pains that come off from the spinal marrow, which furnish to this great sympathetic nerve a quantity of nervous filaments, which increase it and extend its intimate relations with the other nerves.

44. The gums and the alveolar and dental periosteum contain also many blood vessels. We know that the gums are subject to en-

gorgement and to hœmorrhage, and thus the blood must readily percolate their tissue.

45. From these anatomical truths, we must infer that when the gums and the periosteum are affected with irritation, rupture or inflammation, the disorders incident thereto may readily be propagated to these parts of the body which have direct relations to them, and there produce serious consequences, and this the more easily in proportion as the parts are predisposed to disease by extreme mobility.

46. The mobility natural to the first ages of life, and which when excessive, disposes to maladies of various kinds, and above all to the disorders which are exhibited in dentition, is met with in two different and opposite states of organic tissues, viz: with relaxation or debility, or with tension and erethism.

47. In the atonic mobility, there is a loose cellular tissue, a whiteness of the skin; the mucous and serous secretions are abundant; the countenance is mild; the eye not brilliant; the temperature low; children under these circumstances give glaring dejections and milky urine; their transpiration is acidulated (acido-donceatre ou acido-fade.) Their complexion looks well, but the flesh is soft. They have little vivacity, weep little, and when compelled to cry, their cries are not strong. They manifest but little temper. They do not suck eagerly but remain long at the breast; sleep soundly and for hours together. In a word this is the lymphatic temperament, which is said to be proper to infancy, when its effects extend throughout the moral and physical system.

48. The mobility that accompanies or determines erethism, presents itself differently. The childrens' bodies are slender; their limbs delicate; they are lively and petulant. Their colour is florid; their countenance and eyes animated; they suck little, but frequently; their sleep is short and light; some of them are petulant and cross; they pass but little water, and their tongues are stained of a yellowish colour. Their dejections are often of a deep yellow. Their temperature is elevated—we might say that the temperament of such children partook of the bilious and the sanguine. In short, as the former (47) are phlegmatic and sluggish, these are lively and petulant.

49. The accidents of dentition in the first of these conditions, are most frequently a slimy ptyalism with relaxation, and whiteness of the lips; a clammy tympanitic condition of the lower belly; a mucous and

glairy diarrhœa; moist eruptions with pale crusts; and finally that kind of eclampsia and epilepsy which M. Saillant has thought to depend essentially upon a thoroughly lymphatic constitution, and to be caused by a mucous and aqueous engorgement of the brain.

50. In infants with whom mobility is united to erethysm, (48) the temperature of the body is elevated during dentition; the mouth is dry and hot, and the children drink readily; the lips and the caranculi laceymales are red, the diarrhœa is serous and acrid, and the children have redness of the arms; sometimes excoriations, and transient inflammations. If eruptions break out, they are scattered over the face or the hairy scalp, and their colour is a bright yellow. These children are threatened with fever and convulsions.

51. Mobility then, and the disposition of body which it creates or cherishes, does not always exist under the same forms, and consequently demands different management and treatment. The atonic mobility demands pure and fresh air, animal nourishment, dry frictions over the whole body, cold baths; in a word all that can invigorate the constitution, diminish the quantity of lymphatic and mucous humours, vivify the solids and fluids and render their functions more regular and more natural.

52. The sthenic mobility having for its foundation a *tension* that may be taken for real strength, requires air somewhat humid, vegetable diet, warm or tempered baths, means proper to relax the tissues and to allay the heat disproportionate to the exercise of the functions.

53. This distinction gives the proper place both to the eulogiums and the reproaches which have been bestowed upon different methods of preservation and cure. These have been recommended in too general terms, and without regard, if not to the predominant condition of the system, at least to the particular constitution determined by the state of the organized tissues.

54. There was a time, when by the advice of Jean Jacques (Rousseau,) the rearing of children was conducted upon a plan, not *hard* but *cold*. The children almost from birth, were scantily clothed; they were washed with cold water; they were plunged in buckets of the same—and physicians have approved these proceedings. Raulin says that he saw children, who were scantily clothed, and accustomed to cold water, become strong and robust. He says that the greater part of them went almost naked during the most extreme cold of winter

without appearing to suffer from the exposure.* A great number of good medical writers recommend these means, as the only ones that can counteract excess of mobility, cachexy, rickets and difficult dentition.

55. M. Duval, in a work called 'le Dentiste de la Jeunessè' has neglected nothing that can condemn the use and application of cold. By the strength of the authorities that he brings to the support of his opinion, he gives reason to fear that this method will harden the skin of children and impede their growth; a condition which at the epoch of dentition shows itself by putrid stools of an alarming character, as the translator of Rozen has remarked.

56. Thus to listen to the opposers and the partisans of a practice, one might suppose that the healing art rests on bases uncertain and continually shifting. Indeed, this is unhappily too true in the case of a great number of physicians, who look only at the remedy, and disregard the indication. Every day much good and much evil is done by the same means. It is only the well-instructed physician who honours the science, and displays his knowledge by administering remedies, and varying his practice according to the rational indications.

57. In choosing wisely between the warm bath and the cold, the physician will have at his disposal one of the greatest resources of the healing art, against the mobility which it is important to modify before dentition. I have seen weak and drooping children, bathed every morning and evening in cold wood ley, recover rapidly strength and gaiety. The alkaline quality of the bath cannot add much virtue to the action of the cold thus applied to the body. I am informed of a mother of a family who had lost three children in dentition, who succeeded in saving two others born subsequently, by beginning to bathe them in cold water when a month old, and continuing the practice from day to day during the first year of their life; but these children were in the condition of those spoken of; (47) and in them was evidenced the good effects of cold applied with *judgment.*

58. M. Raulin has advanced the opinion, that this remedy is especially proper to give to the solid fibre an elastic tone, which is communicated to the vascular membranes. Hence he says, the circulation of the fluids requires activity; the blood becomes more dense, and more capable of action and resistance. Strength is com-

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* Traité de la conservation des enfans, tome 11, page 126.

municated to the limbs, the viscera, &c., their functions are performed more perfectly, and with regularity. (1) Above all, it is the transpiration, according to Lieutaud, (2) which is regulated by cold baths. So also say Tissot (3) and M. Durando; (4) and this advantage certainly is one, which renders the remedy very valuable. When the functions of the skin are freely performed, harmony subsists in the different physiological acts, and generally the viscera are greatly benefitted.

59. When to the use of these means are added sufficient clothing, fresh air, dry frictions, which most efficiently second the action of the cold bath, and the use of moderately hard beds; almost every thing is done that is necessary to repair a bad constitution, a soft temperament or phlegmatic habit. Does not experience teach us, that more children who have been brought up delicately die than others; and that provided we do not exhaust their strength it is better to keep it in action than to husband it? Nevertheless we must not forget the testimony of M. San Montin (5) in reference to the Laplanders, one half of whose children he tells us, die within the first year from the effects of cold, to which they are exposed for the purpose of hardening them.

60. Doubtless, warmth is necessary for the new-born infant. Its weakness, delicacy, and the frail state of its life, together with its transition from a place of warmth and moisture, all indicate the sort of care that is necessary to prolong its life. A soft bed, pliant and warm covering, sleep, darkness, air, the warmth of the mother or the nurse; warm baths, as means of cleanliness; these are the aids it needs: but this does not hinder that the treatment soon be modified. Provided proper gradations be used, all may be accomplished: When an end is determined on, the only question for wise men is the best means of attaining it.

61. All that I have said about the utility of the cold bath and hardy life, for children of too great mobility, to whom it assures an easy and safe dentition, does not prevent me from speaking in the highest terms of the warm bath. Immersion in a bath of this temperature,

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1. Traité de la conservation des enfans, tome 11, page 74.
2. Precis de matiere medicale, tome 11, page 5.
3. Avis au peuple, page 404 and 406.
4. Gazette de Santé, an 1774, page 250.
5. Disert. historico-medica Le Medicina Laponum.

brings the body into contact with the caloric of the water, and we know how stimulating heat is, and here it animates the functions. Hence it is useful to children, who languish only from debility, and who are feeble, merely from want of a sufficient quantity of the general principle of heat and life. Persons who speak from theory, are led at first to exclude the warm bath, on account of the vulgar prejudice against its action. They say "the warm bath relaxes and weakens," when it is incontestible that it animates, restores and sustains, the strength. Thus we may produce the same effect from opposite means. Nevertheless, I do not think that it is altogether indifferent whether we use the warm bath or the cold. One cannot long experiment upon this subject without discovering that the warm bath acts more promptly, and that the effects of the cold are more enduring; that the warm suits better in great debility, the cold in general relaxation of a less degree, and as nothing of the kind is absolutely good or bad, circumstances only, must decide between them.

62. In general, if immediately after a cold bath, the infant remains pale and more or less benumbed; and if any of its limbs appear contracted after the child has been dressed and rubbed with warm cloths, then not only will the cold do no good, but it must be abandoned for fear of harm. It is then that the warm bath must be preferred. A father of a family who had adopted the cold baths in the physical education of his children, has observed, that the cold baths should be suspended during dentition; because the whole system is then undergoing modification, and the application of cold might occasion very great irritation. Indeed, we are warned of this necessity by a sort of dread which the child shews of the cold bath at this period, though formerly it may have appeared to be rather agreeably affected by it than otherwise.

Thus cold baths may be a good means of preventing the effects of mobility before dentition; or, on the other hand, of developing this mobility upon which the unhappy results of this process depend.

63. The cold method is very useful for the children whom charity has assembled in the hospitals; provided that at the same time the air of the rooms be purified by alkaline vapours. From the results of the attempts to raise nursing children, in communities, as in the hospitals for "enfans trouvés," it is evident that the air of the apartments in which they are congregated, soon acquires such bad qualities that the difficulty of raising them, and their mortality is very greatly increas-

ed by assembling them together. The little things are a prey to maguet:[*] and it has been thought that this morbid affection, the principal symptoms of which appear in the mouth, is the result of putrid and contagious miasma. But the physical condition of these children, feeble and exhaling acid, shows plainly that their state might be improved by the use of cold water, while at the same time, means should be used to neutralize the acid vapours that their breath and transpiration diffuse through the room. Children abound in gelatine and albumen; the degeneration of these animal substances is known, as the children emit the odour of sour dough, at the same time there is something of a putrid nature in these emanations. Albumen is very liable to putrefaction.

It is useless to remark that this period of putricity is not that which should be chosen for purifying the atmosphere with alkaline vapours.

64. Is it in circumstances analogous to these that Professor Mitchel, of Philadelphia, has proposed to combat the contagion with alkalies? while all true and close observers agree in establishing the good effects of acid vapours, in disinfecting places imbued with contagious miasma.

65. I have said (52, 62) that the warm bath or the tempered bath is suitable for children whose too mobile constitution suffered through erythism, heat, and too great activity; while the cold bath is proper for those who are endowed with a contrary constitution. For these, the warm bath effects every thing—moderating their heat, relaxing gently their tone, and tranquilizing their system.

When the children profit by the bath, they grow well; and sickness and pain are not likely to assail them. Bathe in warm water a child whose skin is too hot and dry, and whose belly is bound up, and you will see its members unbound, its bowels loosened, and its whole frame to be gently and healthfully relaxed. It is for constitutions such as these, that the author of the book De Salubri victus ratione, attributed to Hippocrates, has said, that by the use of the warm bath a child is fortified against convulsions, assisted in its growth, and gifted with a fresh and rosy colour.

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[*] *Maguet*, is a disease common in the French Foundling Hospitals. It usually occurs in very young infants, sometimes when only a few days old. In this disease the mucous membrane appears covered to a greater or less extent, with a white milky or curd-like concretion at times covering the whole surface as if the child's mouth were lined with cream or curd. We have seen it to such extent that the white fluid exuded from the nostrils. It is sometimes dependant upon apthæ, but may exist without ulceration.—*Evanson and Mannsell practical Treatise on management and diseases of children, page* 216.

66. The cold water may be used when the application of cold seems to be proper, by sponging the entire body of the infant with it; but when heat is required, we cannot use it in a similar way. The warm water, which is the means of warmth employed, cools very readily, and if applied in this way would produce an effect much like that of cold itself. Hence the child must be plunged into it.

67. Let no one mistake the proper application of the cold and warm modes of treatment; and let no one confound *healthy* with *diseased* conditions. A child in health requires nothing more than the general means of abundant and well regulated nourishment, &c., but a child, excessively mobile is sick already. If you wait until the time of dentition, there will no longer be leisure for remedying the vices of constitution that may render this process dangerous; then we must use a treatment suited to the complication of evils that must be directly treated; before this period we have nothing to do, but to manage wisely the resources of preservative care.

68 As clothing makes a part of this management, it is necessary for me to say a word about this. Much has been written on the advantages and the dangers of the mode of swaddling infants. Swaddling clothes have been in use too long and too generally to permit us to suppose that they are injurious, as has been said. They may be injurious so far as they hinder the free movement of the limbs at an early age, when these movements are *exercise;* but they invest the child warmly, and prevent the consequences of chilliness which must otherwise affect infants, after wet with urine, and transpiring freely. This is not all. The swaddle is useful in the atonic mobility. This species of bandage supports the flesh, and hinders the distention of cellular tissue, and the consequences that might result from it. In the sthenic mobility, the bandage is of doubtful efficacy. Lively, restless children, need freedom of motion. Restraint fatigues them; loose clothing relieves them by permitting all kinds of movements, and they are refreshed by contact with the air. In prescribing the swaddling clothes, the children are kept cleaner; and this is a very great advantage. In mobility with erythism, extreme cleanliness is even remedial.

69. We have seen, (51) that animal nourishment is eminently suited to cases of asthenic debility; and (52) that vegetable nourishment is very appropriate to cases of mobility with erythism and tension. But we are now treating of infants at the breast, and even of

the very youngest of these. They are confined to milk as their only diet, and if any other is substituted for it, the prejudice of nurses and mothers forbids the use of scraps or vegetable creams, or porridge. But reason and observation more valuable still, ought to undeceive them, and physicians and accoucheurs, should lose no opportunity to impress upon them the necessity of so managing their children, as to overcome the natural vices of constitution, among which morbid mobility ranks high, as particularly dangerous.

70. It is evident that animal food repairs the strength more promptly than vegetable can;—that the former is more heating than the latter, and that among all the means of invigoration through aliments, nothing equals the juices of animal substances. Let an infant subject to acidities, and mucous and glairy dejections, languishing and feeble, be fed, not altogether, but in addition to its milk, with well prepared broth, or with the juices of roast meat, and we shall see a great change to its advantage. Its constitution is strengthened, the body warms, the green and glairy passages are suspended, the colour improves, the child grows fat, and the mobility disappears. Thus, without medicine by the use of proper aliments alone, its constitution is ameliorated, and the catastrophes of critical periods are averted.

71. Sweet and cordial wines, such as the Spanish wines, contribute much to produce and continue these results. This, however, is no more in accordance with the notion of nurses, than the use of animal food.

72. But this animal nourishment is as unsuited to meagre and warm children, as is the vegetable nourishment which is proper for them, to restore vigor to children soft and fresh in appearance. This vegetable nourishment consists of the creams of bread, rice, potato-flour, barley, &c. In the second chapter I must speak again of the nature of these aliments and the mode of administering them. It is sufficient to mention them here among the means of cure of morbid mobility—a cure which is one of the circumstances most favourable to the success of dentition, and which it is necessary to secure in advance; for when dentiton has arrived, there are other indications to be met, very different from those acquired by mobility.

73. It is to this (mobility) that we must attribute the precarious and the tardy dentitions, often alarming and sometimes fatal, that are spoken of in the writings of observers. When there is irregularity in the acts of nature, one is sacrificed to the vigour of others. M.

Duval speaks of the son of a Prussian nobleman, aged eleven years, at which time the two great incisors of the first set of the superior jaw had not yet appeared; and his feeble condition gave ground for fear that he would be deprived of these teeth altogether, had not the swelling of the alveolar margin given hopes, that by renovating the strength of the child, the retarded teeth might yet be cut. Baths medicated with the husks of expressed grapes, and an appropriate regimen produced the desired effect. *

CHAPTER II.

Of errors committed in the mode of raising infants, considered as the chief causes of difficult dentition.

74. The very important subject of this chapter has direct reference to dentition, since an infant, well made at birth, will soon acquire serious vices of constitution if it be raised in a manner unsuited to its wants, and contrary to the end of its organization. We find at the end of Huxham's treatise on fevers, an essay on the manner of nourishing and raising children, in which there occurs a very sensible passage, in point. Dentition, says the author of this essay, is considered with reason to be dangerous to infants, but it is not so in the order of nature. Every day's experience proves this; for if dentition were a malady we could not enjoy good health until twenty-two years of age, since we are getting teeth the greater part of that time. Although this operation of nature be accompanied by fever, convulsions and many other troublesome phenomena, yet we find so many cases of exemption that it would be improper to consider these accidents natural, and to hide the fact that they proceed from a

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* La Dentiste de la jeunesse, page 28.

too great fulness, or from the corruption of humours put in motion by the pain of dentition. It is true that the eruption of the teeth is scarcely ever unattended with pain and indeed a little fever; but when the blood and the humours are neither acrid nor too abundant, these accidents are so inconsiderable that they gradually disappear without any consequences.

75. Bad air, motion and repose, sleep and wakefulness, even the secretions and retentions, exercise less decided and pernicious influence upon the health of infants, than do aliments and regimen.—Therefore this article requires particular consideration.

76. Does any one doubt that errors of diet and abuses of regimen occasion difficult dentition? To prove it we need but some reflection. No one will deny that an almost necessary consequence of errors of regimen is the amassing of hardened fæces; the enfeebling of the digestive organs, and as a result of this, a bad preparation of the chyme and the chyle—These depraved matters are not fit for nutrition; they occasion the wasting away of the nurslings, and determine or aggravate the mobility that destroys the good constitution of infants at the breast. We know that at the epochs when organic developments are made, there is always some degree of mobility which augments in proportion to the difficulties attending any such development. Therefore, how can a body already enfeebled and containing within itself different morbific foci, support the always long continued irritation which accompanies dentition, without its mobility being greatly heightened, and without serious results in consequence of it? How can it be that the humours whose qualities have been vitiated, when carried to the mouth (not by a predominance of the brain's action, a predominance which exists no where but in the imaginations of theorists, but because the formation and eruption of the teeth established in the jaws a fixed point of irritation,) How can it be that these vicious humours will not augment by engorgement the phlogosis and its terrible consequences? How can it be that when the primæ viæ enfeebled and irritated, contain a great quantity of vitiated secretions, always ready to be absorbed and to pass with all their bad qualities into the secretory passages, a fever will not be lighted up sufficient to involve the whole system in fearful disorder?

It is in reference to these different circumstances, the causes of which act far more powerfully upon the children of the rich than of the poor, that Rozen Ludwig, and Mozer have said that the children of the great escape with more difficulty the dangers of dentition.

77. Many facts add great weight to these assertions.

Among these facts, which it would be easy to accumulate, we may remark the following. It is known to physicians and even to nurses, that a moderate diarrhœa is a salutary and desirable evacuation during dentition. They are not ignorant that the fever which accompanies this evolution is considerably abated by the stools. According to the observation of Hippocrates and the experience of those who have devoted themselves to the care of the health of infants, nurslings, full and plethoric, those whose belly is hard and costive, run great risks in dentition. We may add that animals who are not troubled by the abuse and errors of regimen know nothing of the dangers of this opoch.

78. I pass to another kind of proof. Robert Bland (1) in England, Nils Dalberg (2) in Sweden, and M. Raymond (3) in France, from tables of mortality prepared with care, have proved that from the defect of good aliments and suitable clothing, women of the indigent class, who are very fruitful, have great difficulty in saving a small proportion of their infants. We know the striking statement communicated by Dr. Harris, of the prodigious number of nurslings that were provided for in a parish a dozen miles from London, in a healthy and airy place, of whom all but three died within a year, through the fault of mercenary nurses. (4) The learned M. Gilibert has very carefully observed children nourished with bad aliments and without proper regulation as to quantity of food, and of these he declares almost all perished before they were nine months old! (5)

In these and similar facts, do we not see strikingly exemplified the pernicious influence of bad regimen on the period of dentition, and a respective augmentation of mortality during this process, among badly nourished children?

79. If regimen exercises such power over dentition, it is important to understand the errors and abuses of it, in order to describe the ob-

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1. Transact. philosoph—tom. lxxi. 1781. part ii.
2. Tal om Nægradet auens, etc. 1778.
3. Mem. sur la topographie de Marseille. Mem. Sac. Royal de med. An. 1777,—8,
4. De morbis infantum, page 7.
5. Disser. sur la depopulation causée par les nourices mercenaires, page 319.

stacles, that obstruct the process in question, and to discover the causes of the accidents that occur at this time.

80. The first and undoubtedly the most dangerous of these errors, is in giving the very young infant milk of a bad quality. If the matter which is to repair and sustain the parts is acid and vitiated, these parts, receive in the very agents of nutrition the elements of destruction. With milk of this kind the children acquire sthenick mobility. It is not to medicine that we must go for relief in this case, but to fresh and properly prepared milk; such as that which after the accouchement fills the breasts of the mother. This passes by gentle gradations from a degree of tenuity to a consistence almost creamy; for nature has wisely regulated the quality of the aliment she destines for the infant, according to its capabilities of digestion. Unhappily all mothers cannot nurse their children. This is restricted to healthy and vigorous women, and such should blush to refuse to nourish their children. They who do so merit the humiliation endured by the mother of the natural brother of Gracchus; this young Roman when he returned from a military expedition, brought to his nurse more magnificent presents than he did to her who had given him birth. 'My mother,' he said, you carried me nine months in your bosom, but as soon as you saw me you abandoned me. My nurse received me gladly; she carried me in her arms and nourished me with her milk for three years—all she did was voluntarily done. You carried me in your bosom and nourished me with your blood from natural necessity. I feel more indebted to my nurse than to you, and I wished to show this by the difference of my present s!

81. It is not to be supposed that it is always impossible to hire a good nurse. Experience proves the contrary; but to fulfil all the functions of a nurse, it is necessary for the woman to have that maternal tenderness that would expose her own life to protect that of the child. She must also have that maternal love that will cause her to control her diet and her appetites; she must have that maternal patience which will fit her to watch over the child and guard its cradle from pain and disease. Are these qualities to be found in many nurses? This is not the place to enumerate the causes of depopulation which are found in the vices, prejudices and blunders of mercenary nurses; causes which Dr. Gilibert has thoroughly analyzed; nor to insist upon the different considerations that make nursing by the mother a sacred duty as well as a salutary obligation. I will

only say that in prefering the milk of a stranger there is risk in giving bad nourishment to the child; either because it may be less suitable to its constitution, or because of its too great or too little tenuity. Milk too thick will produce a part of the effects of indigested aliment, of which I will speak presently; milk too serous for a robust child, may produce too great mobility, after having caused a degree of decline and inanition.

82. To be of good quality, milk ought not only to be furnished by an excellent nurse, but her regimen should be salutary, for the milk retains the qualities of the aliments made use of.

83. An excellent nurse should be of good morals; and indeed of fine physical qualities. Her age ought to be between twenty and thirty, and the colour of her skin natural. Her eyes should be lively and animated; her hair and her eyebrows brown or light coloured, her lips red, her teeth sound and good, her gums hard and well coloured. She should have sweet breath; the nose unobstructed, and exhaling no odour—the neck sufficiently long, the chest large and well arched; her breasts ought to be loose, firm and distended; elastic and moderately large; with the nipples sufficiently imitable to be firm when the finger is passed under them, brown, long and thin;—placed upon the middle of the declining part of the breast, in the midst of an elevated areola of an obscure red colour. Her milk should have a sweet smell, its colour should be a little dull, and its lustre a little bluish and semi-transparent. It ought to sustain the proofs of its goodness; such as the following.

84. Put a drop of the milk on the nail, or a certain quantity on a china plate, and incline it slowly and cautiously. If the milk runs too fast and without leaving traces it is too serous; if it does not run except with difficulty and leaves much behind it, it has the opposite quality. Let a drop fall into the eye to test if it has any acidity—mix it with water to see if it dilutes easily. Taste it to know whether it be too sweet, saline or bitter; and finally heat it with acids, and let it stand to see whether it abounds too much in cheese or cream. M. Spielman has obtained from two pounds of woman's milk, an ounce and a half of cream, which gave him six drachms of butter and a half ounce of very delicate cheese.

85. As to the other qualities of a good nurse, it is necessary that the hereditary diseases of her family (if any) should be inquired into. She should neither have leucorrhœa, nor an open issue; indeed an issue recently closed ought to be an objection. The nurse should be

perfectly free from cutaneous eruption, hysteria and habitual convulsions. It must be ascertained that she has not already nursed children with eruptive disorders. Pregnancy is a doubtful objection.* She should not be passionate, rude, capricious, nor a tippler in intoxicating drinks.—Inquiries into these matters cannot be too minute.

86. As to the regimen necessary for the nurse, it is not necessary to make great and sudden innovations upon previous habits. Experience has proved that these result unhappily. Linné has made very sensible reflections upon this subject.

He says nurses are most often chosen from the poorest class of females, and are such as have been obliged to abandon their children, or those who have lost them. As these have from their childhood been accustomed to gross food and active labour, and suddenly are transfered to houses where they are idle, eating and drinking much, and subsisting entirely upon succulent food, they are soon tormented by plethora, melancholy and luxury. They become heavy, lascivious, and sad ; for every body knows that a sudden change from gross food and violent exercise, to an abundant diet and absolute inactivity, developes a spontaneous acid. The mother may scarcely feel the slightest effects of this, but the infant becomes the victim—and in consequence becomes subject to colic and vomiting. The milk coagulates very strongly; the stomach swells and becomes hard to the touch—it cannot digest the milky mass. The excrements are green, the face pale; eruptions appear upon the skin, and the scene at length terminates in fever and convulsions. (2)

Can dentition be regular in the midst of these evils? Must it not aggravate them seriously?—

87. When a nurse who has had her milk for some months is charged with the care of an infant from birth, she ought to modify her aliment so that her milk may improve in freshness and tenuity. For this purpose she may use a drink of a character likely to produce this effect: such as an infusion of the fresh root of the *chien-dent* (dog grass,) in which some bruised aniseed is thrown; or a decoction of the fresh root of *scorsonere* with fennel seed; a watery infusion of liquorice root, or any other drink of the kind. †

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* See Baum's treatise on infantile convulsions, 2d. edition page 84.

† I have no faith in the virtue of these or any other herbs to effect the purpose for which they are here recommended. Abundant drink may be necessary—and as warm water is disagreeable and offensive to the stomach, it must be rendered palatable by the addition of something innocent and aromatic.—The choice may be left to the nurse. (*Translator.*)

88. Such precautions are less necessary when the proper mother of the child nurses it for fifteen days or a month. Her milk possesses qualities the most proper to evacuate the meconium, and cleanse the bowels of the infant.

89. It does not suffice that the milk be of good quality—it is also necessary that the nurse shall permit the infant to take it only when it is required. Unfortunately women are persuaded, and not without a show of reason, that an infant ought to nurse the more frequently in proportion to its youth, because of the great rapidity of nutrition, and the abundance of the excretions. On this account the breast is given them at very short intervals. Gorged with milk, the infants reject it without effort or in a fit of hiccough ; but nurses regard these salutary vomitings as a loss of aliment which must be prepared, and they again offer the breast. This course is continued ; the stomach becomes accustomed to throwing off its contents, or is enfeebled ; the digestive powers are weakened—hence acid or glairy matters form and multiply in the mesenteric organs, and the health of the child is either destroyed or prepared for destruction at the period of dentition.

90. All wise and experienced physicians have pointed out the effects of this sort of dietetic error. M. Gilibert has treated this subject with great truth. According to him, nurses almost always err through ignorance or prejudice, with regard to the manner of nursing infants. Many of them, persuaded that good milk can never do any harm, make their children nurse almost constantly. Now all physicians agree that at all periods of life, there ought to be a proper interval observed between the times of eating; it is evident that if the stomach be filled with new aliment while it is engaged in digesting that which has already been taken, the preparation of the food for assimilation will be imperfectly performed. The chyle will be crude and of bad quality. Infants are more exposed than adults to the disorders that this mistake occasions. Their digestive organs are delicate and feeble. If they are made to nurse before the milk already taken be digested, the new curd that is formed hinders the digestion of the old. Hence arise wind and colics. The milk sours; occasions convulsions, obstructions, marasmus,* evils common to badly nourished children, and which make their ultimate assaults during

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* Dissertation on the depopulation caused by mercenary nurses, page 316

dentition, and often obstruct this process with obstacles that are not overcome.

91. The daughter of a grocer had been nourished by her mother, under all the prejudices of a vulgar woman; at the end of the fourth month commenced to fall away through a considerable diarrhœa. The anterior part of the gums swelled and were very painful. Inflammation took place, apthæ spread themselves over the mouth, cough supervened, the jaws were puffed up, as they appear in the disease called 'fluxions sur les dents;' the diarrhœa became colliquative, and the child being no longer able to take the breast, fell into stupor only interrupted by moans; convulsion succeeded, and the little sufferer expired without having been able to cut its first incisor teeth.

This example strongly proves the reciprocal action of a bad regimen on dentition, and of dentition upon the disordered condition of the digestive organs, produced by such a regimen.

92. A consequence of the morbid results of which we have just spoken, is that it is necessary to begin early to form a good constitution for the child, and to procure for it by means of a good regimen, a dentition exempt from unnecessary inconveniences. On this account, a child should from its very birth be regulated, both as to the quantity of milk it takes, and the number of times it is permitted to take the breast. I have known very respectable women, of very high rank, who while nursing their own children at a time when such a course was not common in fashionable circles, had the courage to accustom their infants to a certain number of nursings in the twenty four hours, and their success induced many good mothers to imitate them.

93. When an Infant has taken a sufficient quantity of milk and yet cries, it is not from hunger but from some other cause. Probably it is from wind, which may be dissipated by the application of a warm cloth to the bowels, or by gentle friction with a fomentation of aniseed water, chamomile, or orange flowers. As long as it cries it should not as a general rule, be permitted to take the breast.

94. The state of the child's health, the strength of its constitution, and the quality of its dejections, ought to decide the quantity of milk it may be permitted to take, and the number of times of nursing it. When the breast is full, hard, and a little painful, nurses are in the habit of pressing infants, by patting them upon the back, to empty it. This ought never to be done. It is better that a good nurse should lose her milk from her nipples, than incommode her infant.

This only happens when the child is very young. As it grows older, it becomes eager to empty the breast, and every nurse knows by this sign, when the child thrives and when it takes aliment enough.

95. The abuse which women make of their milk; the idea, very often false, that milk alone is not sufficient for the nourishment of the child, and the rapid growth of the infant, have led nurses to give even to very young children, additional food; and this custom has not yet been discarded. Nurses are very fond of routine; they have local customs, and the councils of old women, grand mamas and duennas, exercise a dangerous despotism over the minds of the young mothers and inexperienced nurses.

96. The additional food of which we speak, is in many countries a preparation made of wheat flour, or that of some other grain, boiled in water, cow's or goat's milk, or even in broth, thickened on the fire. This preparation has received the name of bouillie. It is indigestible, and is very improper, as its basis is an unfermented and very fermentable substance. All the authors, who have treated of the hygiene of infants have protested against the use of bouillie; and their opposition has not been unnecessary. Notwithstanding the great mortality of young infants, and the difficulty of preserving them beyond the first year, every thing leads us to believe that in most cases, death is owing to errors in their physical education; and prominent among these is the abuse of bouillie

97. In other places where bouillie is unknown, the cream of bread is used, called *panada*, from its principal ingredient. This preparation which contains nothing unwholesome may be made of white bread broken or crumbled in water, milk or broth, cooked over a slow fire and flavoured with a little aniseed. Yet it may become unwholesome by cooking it until the glutinous parts of the wheat forms a viscious and gluey substance. This is a kind of bouillie, and its bad effects should be pointed out.

I have spoken of this preparation in my treatise on the convulsions of children, but I must repeat in this work my remarks upon the great abuses in the physical education of infants, and present additional evidence, to that I have already adduced in my other writings on infantile medicine.

98. Bouillie and panada are more heavy for the stomach than milk, and we have seen (89) that this aliment is often injurious in early infancy.

These preparations engorge the delicate vessels of the mesentery; the gross chyle which is made from them, stopping in the glands, which are only bundles of lymphatic vessels folded upon themselves. Authors have enumerated among the effects of this improper aliment, diarrhœa from obstruction of the mesentery, atrophy from defect of nutrition, and all the maladies which are produced or aggravated from this cause.

99. I have seen the infant son of a lawyer, which was nursed by a woman who had not sense enough to abandon the prejudices which I am combatting. This child, whose constitution had never been strong, acquired a large belly, which grew hard; its head became too large in proportion to its body, but with these exceptions it reached the age of eight months without serious disorders. At this time a diarrhœa supervened, which became colliquative; the stools were watery, deep green or greyish, and colic, wind, and pain in the gums tormented the child, which died in convulsions without having cut a single tooth.

This case supports the one recorded in paragraph 91, and is a new proof of the danger of the improper aliments, upon which nurses persist to feed infants at the breast.

100. Unhappily such aliments (96 and 97) as they use, enfeeble the tissues, and give to the children an appearance of enbonpoint and health. Nurses who take pride in having their infants fat and sleek, confirm themselves in the propriety of the course upon which we are commenting. When serious diseases occur, they blame dentition which is a natural process; worms which do not exist; and fever which is but the effect of bad nourishment. Death carries off the victim, and the next infant that falls into the hands of the nurse, is ordinarily no better treated.

101. We can give no more countenance to those nurses who wish, as they say, to accustom their children to eat every thing, and to make them 'a good stomach,' while they have scarcely got their first incisor teeth. For this purpose they give them bread and meat, which they (the nurses) have somewhat masticated; in fact anything of which they eat themselves. They are not even sparing of those aliments which generally disagree with infants at the breast. Thus the stomach, so far from becoming strong, grows feeble, the disorder of the bowels increases instead of being remedied, the children die, instead of living healthy and vigorous.

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